



**B.A. PART-III
SEMESTER-V**

**ECONOMICS-PAPER-I
ECONOMICS OF
DEVELOPMENT**

UNIT - I

**Department of Distance Education
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Lesson No.

- 1.1 : Economic Growth and Economic Development
- 1.2 : Features of an Underdeveloped Economy
- 1.3 : Determinants of Economic Development
- 1.4 : Capital Formation : Its Sources
- 1.5 : Nurkse's Thesis of Disguised Unemployed Labour and Lewis Theory of Unlimited Supply of Labour
- 1.6 : The Classical Theory of Economic Growth
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Economic Growth and Economic Development

1.1.1 Objectives

1.1.2 Introduction

1.1.3 Economic Growth and Economic Development :

1.1.3.1. Economic Growth.

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1.1.1 OBJECTIVES

After having gone through this lesson you would be able to :

- define the terms of economic growth and economic development.
- differentiate these terms.
- know main methods of measurement of economic growth/ economic development.
- define Human Development Index, understand its importance as a measure of economic growth.

1.1.2 INTRODUCTION

Economists of the world devoted their energy and talent for finding the solution of short-term economic problems which arose during the depression of 1930s and the war period of 1940s. However, during 1950s and 1960s emphasis shifted towards the issue of attaining and accelerating development in underdeveloped countries and maintaining development in developed countries of the world. This was perhaps because of independence of most of the Asian

and African countries from the colonial slavery after second world war. These countries urged for rapid economic development and raising the standard of living of the common masses. Consequently, most of the post-Keynesian thought is concentrated on the subject of economic growth. The study of economic growth and economic development has now become indispensable to economic theory. Till 1960s the term 'economic development' was often used as a synonym of 'economic growth' in economic literature. Though the terms are used interchangeably, but they have different connotations. The economists have drawn a line of demarcation between economic development and economic growth. Economic development is considered to mean economic growth plus progressive changes in certain crucial variables which determine the well being of the people.

1.1.3 ECONOMIC GROWTH AND ECONOMIC DEVELOPMENT

'Growth and 'development' are sometimes used synonymously in economic discussion, but there is difference between these two. Economic growth means increase in output, while economic development implies more output and changes in the technical and institutional arrangements by which it is produced and distributed.

Growth may well involve not only more output derived from greater amounts of inputs but also greater efficiency, that is an increase in productivity or an increase in output per unit of input. Development goes beyond this to imply changes in the composition of output and in the allocation of inputs by sectors.

1.1.3.1. ECONOMIC GROWTH

Growth is measurable. Economic growth may be defined as a significant and sustained rise in per capita real income. According to G.M. Meier, Economic Development is "the process whereby the real per capita income increases over a long period of time and the end result of this process is growth in nation's real income which may be termed as economic growth". Economic growth is mainly concerned with guaranteeing a certain stable rate of growth of income. According to Kindleberger, "Economic growth means more output".

Several factors contribute to economic growth of a country. Growth of population, particularly working population, is the first cause of growth. Technical knowledge and progress are other twin factors increasing the output per head. Increase in the quantity of capital per head is another factor, which tends to raise the growth rate of the economy. Supply of savings, another factor also determines the rate of growth of an economy. Structural transformations also lead to economic growth. Urbanization is another factor promoting economic growth. Another factor which leads to economic growth, is the growth of foreign trade.

Labour productivity (output per worker) may also be considered as an index of growth and standard of living.

1.1.3.2. ECONOMIC DEVELOPMENT

‘Economic Development’ is a broader concept than ‘economic growth’. Economic growth and structural changes together constitute economic development.

As a result of economic development not only there is increase in national output, but several other changes take place simultaneously. These are :

- discovery of additional resources;
- capital formation;
- invention of new and better techniques of production;
- improvement of skills;
- other institutional and organisational changes.

Changes in the structure of DEMAND FOR PRODUCTS are influenced by:

- changes in size and composition of population;
- change in tastes;
- change in level and distribution of income; and
- other institutional and organisational arrangements.

Thus, the term economic development may be interpreted to imply not only increase in general output, rise in real national income and per capita income but also specific development in factor supplies and demand for products.

The structural changes which are quite fundamental in character are inherent in the process of economic growth. The upward trend in per capita income (economic growth) implies, given the labour force participation rate, a rise in productivity per worker or labour productivity. An increase in labour productivity cannot result without capital accumulation and fundamental changes in the production function. A progressive shift in the production function is the direct outcome of the technological advancement and further science is base of modern technology.

As science and technology advance, innovations (new products, new production processes and methods, new materials etc.) take place. This process increases the productivity of labour. The changes in structure must be synchronised and balanced with the changes in the consumption structure. This would really mean economic development.

Alongwith this, the process of economic development implies reduction of poverty, inequality and unemployment. C.P. Kindleberger and Bruce Herrick has stated, “Economic development is generally defined to include

improvements in material welfare, especially for persons with the lowest incomes, the eradication of mass poverty with its correlates of illiteracy, disease and early death, changes in the composition of inputs and outputs that generally includes shifts in the underlying structure of production away from agricultural activities towards industrial activities". This implies that redistribution with growth in order to reduce poverty, inequality and unemployment should be the aim of economic development. Prof. Dudley Seers gives objectives of development as :

- Have general living expanded within a nation to the extent that absolute poverty, the degree of inequality in income distribution reduced; the level of employment; the nature and quality of educational, health and other social services improved ?

- Has economic progress enhanced individual and group esteem, both internally vis-a-vis other nations and regions ?

- Finally, has economic progress expanded the range of human choice and freed people from external dependence and internal subjection ?

Prof. Amartya Sen's Views on economic development : According to Prof. Amartya Sen, development can be seen as a process of expanding the real freedoms that people can enjoy.

Self Check Exercise-1

(i) Define Economic Growth.

(ii) Define Economic Development.

1.1.3.3. Economic Development, Economic Welfare and Social Welfare

Economic development by itself may not lead to economic welfare. If there are glaring inequalities of income, then increase in national product will not

lead to economic welfare. It may make the rich richer, the poor poorer. Economic welfare depends upon the sum of individual enjoyments and satisfaction. This, in turn, depends on the composition and quality of output produced. In the words of Prof. Pigou, 'Economic welfare is nothing but the abundance of goods and services which are exchanged for money.' But a mere abundance of goods will not automatically lead to economic welfare. Distribution system needs to be equitable. Economic welfare is just a part of social welfare. Discontentment, unfavourable impact on social institutions, habits and beliefs may reduce social welfare.

1.1.3.4. Economic Growth and Economic Development-Distinguished

Let us analyse some of the views given by different economists to distinguish these concepts.

According to Kindleberger, "Economic growth means more output, while economic development implies both more output and changes in the technical and institutional arrangements by which it is produced and distributed. Growth may well involve not only more output derived from greater amounts of inputs, but also greater efficiency i.e., an increase in output per unit of input. Development beyond this implies changes in the conditions of output and in the allocation of inputs by sectors."

Friedman defines, "Growth as an expansion of the system in one or more dimensions without a change in its structure and Development as an innovative process leading to a structural transformation of social system."

Everyman's Dictionary of Economics makes this distinction more explicit. "Generally economic development means simply economic growth. More specifically, it is used to describe not quantitative measures of a growing economy, but the economic, social or other changes that lead to growth. Growth is, then, measurable and objective, it describes expansion in the labour force, in capital, in the volume of trade and consumption. And economic development can be used to describe the underlying determinants of economic growth such as changes in the technique of production, social attitudes and institutions. Such changes may produce economic growth."

According to Schumpeter, "Economic development is a continuous and spontaneous change in the stationary state, which forever alters and displaces the equilibrium state previously existing, while growth is a gradual and steady change in the long run which comes about by a general increase in the rate of saving and population."

According to Maurice Bye, “The growth of any economy is generally characterised by growth of net real income per capita. The development of any economy is its growth in conditions of changing structure. It is the transition from a structure with relatively low per capita productivity to a structure with relatively higher per capita productivity.”

According to UNO, “Development concerns not only man’s material needs, but also the improvement of social conditions of his life. Development is, therefore, not only economic growth but growth plus change-social, cultural and institutional as well as economic.”

Thus, economic development implies progressive changes in the socio-economic structure of a country. On the contrary, economic growth refers to increase over time in a country’s real output of goods and services i.e., appropriately called the product per capita. In this way, the term economic development is more comprehensive.

After studying these definitions, the major differences which become clear are the following:

(A) Economic development refers to a process over a long period involving increase in per capita real income accompanied by qualitative and quantitative changes in factor supplies and demand structure.

Economic growth is the end result of economic development. It refers to quantitative changes in various fields of economy, such as increase in capital assets, labour force, real national income, per capita real income, etc. In the words of J. K. Mehta, “The word growth has quantitative significance while the word development has by comparison qualitative significance.”

(B) Economic growth refers to expansion whereas economic development includes both expansion and structural changes leading to increase in efficiency of the nation. It also means more efficient use of natural resources.

(C) Economic development always results in economic growth but economic growth may be without economic development. We can say that economic development of a country leads to economic growth; economic growth by itself does not imply economic development. In other words economic growth is faster with economic development. It is in this sense that developing countries have to pay attention to problems of economic development for faster economic growth so that these countries can compete with the economic level of advanced countries.

(D) Developing or poor countries are faced with the problems of economic development. As pointed out by Ursula Hicks that “development is concerned with the development of unused resources of underdeveloped countries, while growth refers to the problems of developed countries, most of whose resources

are already developed to a considerable extent.” Their natural resources are fully developed with latest technology. They are, therefore, concerned with avoiding stagnation in their economies. Thus, in short, economic development is an issue for developing countries, and economic growth is an issue for developed countries.

(E) Economic growth takes place in both developed and developing countries. But in developed countries, a particular rate of economic growth takes place with less efforts and small structural changes. On the other hand, in developing countries, tremendous efforts and substantial structural changes are needed to achieve a very small rate of economic growth.

For example, India has undergone a substantial change in its economic structure over the past fifty years as a result of its planned efforts, but it has been able to achieve a very moderate rate of economic growth. Achievement of development depends on the freedom of the members of the society. A higher level of political freedom (in the form of free speech and elections), social opportunities (in the form of education and health) and economic facilities (in the form of opportunities for participation in trade and production) helps to bring speedy economic development.

Self Check Exercise-2

- (i) Write three differences between economic growth and economic development.

1.1.3.5. Measurement of Economic Growth/Economic Development

The methods to measure economic growth/economic development are given below :

1. Real National Income
2. Per Capita Income
3. Economic Welfare
3. Human Welfare

(A) National income as an index of development : One of the methods to measure economic growth is in terms of an increase in the **Economy's real**

national income over a long period of time. Real national income refers to the country's total output of final goods and services expressed not in money terms, but in real terms. The money expression of national income must be corrected by an appropriate price index of both consumer and capital goods. Real national income = National income at current prices/General price index.

In symbols $y = \left(\frac{Y_c}{P} \right) \times 100$ (where Y_c is national income at current prices and P is general price index). The concept national income, however, might refer to gross national product (GNP) or net national product (NNP) : It is better to take Net National Product. It is what is left behind after deducting from the Gross National Product, depreciation for the wear and tear of capital goods and also wastage of other resources in the course of production. NNP is the sum total of final consumer goods and services and also additions to capital goods. From the stand point of view of economic development, the increase in net national product must be a sustained increase.

There are several difficulties like illiteracy, existence of subsistence sector etc. in the measurement of national income in the case of underdeveloped countries. The need to eliminate effects of trade cycles and price changes also introduce a complex problem. Many economists interpret development as something more than merely an increase in aggregate output, they believe that it should also denote a rising standard of living. Such a view requires economic development to be defined as a process whereby the real per capita income of a country increases over the long period of time. For, if the criterion is only an increase in real national income, then a situation is possible in which real national income rises, but the standard of living does not rise. This would happen whenever population growth surpasses the increase in national output.

(B) **Per Capita Real Income** : It has been suggested that the increase in the PER CAPITA REAL INCOME of the economy over a long period is a better measure of economic development than the increase in the real national income. Per capita income index can always be calculated by dividing national income by population.

$$\text{Per capita real income} = \frac{\text{Real National Income}}{\text{Population}}$$

$$\text{In symbols : } Y_p = \frac{Y}{N}$$

$$\text{Real income growth rate} = \frac{\text{Growth rate of National income at current prices}}{\text{Inflation rate}}$$

$$\bar{Y} = \bar{Y}_c - \bar{P} \text{ (Bar over a symbol signifies rate of growth of that variable)}$$

$$\text{Per capita real income growth rate} = \text{real income growth rate} - \text{Population}$$

growth rate: $\bar{Y}_p = \bar{Y}_c - \bar{N}$

Many of the economists like Meier, Paul, Baran, Buchanan and Blis favour this approach. It is pointed out that national income trends cannot satisfactorily measure economic progress. They do not throw light on the changes in the standard of living of the people. For example, if the rise in the real national income is accompanied by population increasing at a higher rate, the standard of living will show a fall. The increase in per capita real income will relate economic growth with reduction in poverty.

But the difficulties pointed out in case of increase in the real national income approach remain unsolved. The per capita income may be increasing, but the people of the country may remain poor if the increased income goes to the rich few rather than to the many poor. It can also happen that an increase in per capita real income may not lead to an improvement in the standards of living of the common people. The very objective of development is to provide better life to its people through improvement or upliftment of the standard of living.

(C) Economic Welfare Criteria : Some economists like Okun and Richardson favour making **economic welfare** a measure of economic development. Economic development is “a sustained secular improvement in material well being which we may consider to be reflected in an increasing flow of goods.” Welfare can be increased by higher income, higher consumption, better income distribution and better standard of living. Welfare gives more importance to distribution. However, welfare is conceptually very difficult to measure, because it is subjective, and involves value judgement.

This method of measurement, thus, suffers from certain limitations :

- (i) Economic development i.e., sustained growth in real national income does not always lead to increased economic welfare. The increase in income may suffer from maldistribution.
- (ii) In measuring economic development by taking into consideration increase in economic welfare, the composition of total output is important. The increased total output may consist of more capital goods and it may be at the cost of a reduced output of consumer goods.
- (iii) We must consider not only what is produced, but how it is produced. Expansion of output may have been achieved by incurring more real costs and social costs (pains and sacrifices). This would happen if labour is made to work for longer minimum.d under deteriorating working conditions.

- (iv) We cannot equate an increase in output per head with an increase in economic welfare without additional considerations. According to Meier, “To specify an optimum rate of development we must take value judgements regarding income distribution, composition of output, tastes, real costs and other particular changes that are associated with the overall increase in the national income.”

Another measure of economic growth is the rate of capital formation. The productivity per man hour can be an index of development. In a capital poor labour surplus economy, productivity per hour cannot be increased easily. A better measure of growth could be distribution of national product. But distribution aspect ultimately coincides with welfare aspect.

It must be admitted that development is a multi-dimensional process. It cannot be satisfactorily measured by any single criterion like per capita income, GNP, per capita consumption, welfare etc. However, the criterion of per capita real income, inspite of its limitations, had been accepted almost by all economists till 1979. In his lecture on Economic Growth, Prof. Simon Kuznets mentioned that a proper measure of growth would depend on the application of scientific knowledge of production, increase in productivity of labour, changes in techniques of production and patterns of living.

D. Human Welfare as an Alternative Measure of Development

In recent years, several studies have sought to develop composite indicators that measure development in terms of meeting the basic needs of the majority of population or in terms of the quality of life. Morris D. Morris developed the concept of a Physical Quality of Life Index (PQLI), while economists like Paul Streeton strongly advocated the adoption of a basic needs approach.

The Physical Quality of Life Index (PQLI)

The Index was developed by Morris D. Morris in his famous book, “Measuring the Condition of the World’s Poor : The Physical Quality of Life Index (1979).” Three indicators were used to form a simple composite index-life expectancy at age 1; infant mortality; and literacy. The figures calculated showed that a higher level of per capita GNP is not a guarantee of a better quality of life.

Human Development Index (HDI)

The latest and the most popular measure to analyse the comparative status of socio-economic development in both developing and the developed nations systematically and comprehensively is the Human Development Index (HDI) introduced in Human Development Report-1990. The report was produced under the leadership of Mahbub-Ul-Haq. UN’s HDI measures a country’s average

achievements in three basic dimensions of human development : longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-third weight) and combined primary, secondary and tertiary enrolment ratios (one-third weight); and standard of living as measured by real GDP per capita adjusted for purchasing power parity (PPP).

For the construction of the index, fixed minimum and maximum values have been established for each of these indicators :

- life expectancy at birth 25 years and 85 years.
- adult literacy : 0% and 100%
- Combined groups enrolment ratio : 0% and 100%
- Real GDP per capita : \$ 100 and \$ 40,000 (Purchasing power parity)

For any component of the HDI, individual indices can be computed according to general formula :

$$\text{Index} = \frac{\text{Actual xi value} - \text{minimum xi value}}{\text{maximum xi value} - \text{minimum xi value}}$$

The United Nations Human Development Index contributes a lot in making us understand about what constitutes development, which countries are succeeding. By combining social and economic data, the HDI helps different nations to take a broader measure of their development performance, both relatively and absolutely, and, thus, to focus their economic and social policies more directly on those areas which need improvement. The measures have been enlarged and refined over the years and many related indices of human development like Gender Related Development Index (GDI), Gender Empowerment Measure (GEM), Human Poverty Index (HPI) etc. have been developed in subsequent Human Development Reports. India ranked 119 in Human Development Index measured in Human Development Report, 2010.

Self Check Exercise-3

(i) How economic growth can be measured ? Write down three methods.

- (ii) Define Human Development Index.
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1.1.4 SUMMARY

Though the terms economic growth and economic development are used synonymously, but they have different meanings. Economic growth is a narrower concept and related to a quantitative and sustained increase in the country's per capita output or income accompanied by expansion in its labour force, consumption, capital and volume of trade.

On the other hand, economic development is a wider term. It is related to qualitative changes. It coincides with the welfare objective. It describes the underlying determinants of growth, such as technological and structural changes. Economic development ultimately leads to economic growth.

Earlier economic development was measured in three ways : (i) The simplest method to measure economic growth was to calculate the trend of an economy's real national income, (ii) The second measure related to an increase in the per capita real income. (iii) There was also a tendency to define economic development from the point of economic welfare. Because of certain conceptual difficulties in the measurement of national income and to avoid value judgement from the point of view of economic welfare. Traditional economists preferred to use the per capita real national income as the measure of economic development. But in recent periods Physical Quality of Life Index and Human Development Index (now the most important measure) have been used to measure economic development of the countries.

1.1.5 Key Concepts

Economic Growth : refers to increase over time in a country's real output of goods and services.

Economic Development : implies progressive changes in the socio-economic structure of a country. It combines economic growth with an improvement in standard of living of the people.

Economic Welfare : refers to distributive aspect of the per capita real income.

Standard of living - refers to increase in average consumption level of the individual.

Physical Quality of Life Index (PQLI) - combines three component indicators of infant mortality, life expectancy and basic literacy to measure performance in meeting the basic needs of the people.

Human Development Index (HDI) : studies longevity, educational attainment and standard of living or Real GDP per capita.

Human Development Index is a simple average of the life expectancy index, educational index and adjusted real GDP per capita (PPP \$) index and so is derived by dividing the sum of these three indices by 3.

Longevity : means life expectancy at birth. It refers to the number of years a newly born baby is expected to live.

1.1.6 LONG QUESTIONS

1. What is economic development ? Distinguish between economic development and economic growth.
2. Critically examine the different criteria of measurement of economic growth/economic development? Which method is considered to be the best? Mention Human Development Index in detail.

1.1.7 SHORT-ANSWER TYPE QUESTIONS

1. Define economic growth.
2. Define economic development.
3. Differentiate economic growth and economic development.
3. Distinguish between economic development and economic welfare.
4. Which is the best measure of economic growth ?
5. Explain, 'per capita real income is a reliable yardstick for economic development'.
6. What is Human Development Index ?

1.1.8 SUGGESTED READINGS

1. M.L. Jhingan : Economics of Development and Planning
2. Meier and Baldwin : Economic Development
3. Charles Kindleberger : Economic Development
3. Meier and Rauch : Leading Issues in Economic Development.

FEATURES OF AN UNDERDEVELOPED ECONOMY

- 1.2.1. Introduction
- 1.2.2. Objectives
- 1.2.3. Meaning of an underdeveloped economy
- 1.2.4. Characteristics of an underdeveloped economy
- 1.2.5. Summary
- 1.2.6. Long Questions
- 1.2.7. Short Questions
- 1.2.8. Books for Study

1.2.1. INTRODUCTION

The terms underdeveloped, undeveloped, developing, poor and backward countries are generally used as synonymous, though economists have pointed out shades of difference in their meaning. Prof. Gunnar Myrdal prefers using the term “underdeveloped” countries. Barbara Wood says that the phrase underdeveloped is not very satisfactory. She and Meier and Baldwin favour using the term poor countries. The countries are poor in the sense that their per capita income is low. But some writers feel that the word ‘poor’ should be avoided as it offends the self-respect of the people of these countries. They also criticised the terms underdeveloped and less developed and chose to favour the use of the word ‘backward countries’. In recent years, a new expression, ‘The Third World’ Countries has come into use in preference to the other terms. But mostly the terms are used as inter-changeable. The countries of Latin America, North Africa and the Middle East, Sub-Saharan Africa and Asia excluding Japan and the countries that were formerly members of Soviet Union are underdeveloped.

1.2.2. OBJECTIVES

The main aim of this lesson is to acquaint you with the characteristics of underdeveloped countries. After going through this lesson you should be able to :

- understand the meaning of an underdeveloped economy.
- write down three definitions of an underdeveloped country.
- know the diverse structure of underdeveloped countries.

- explain the features of underdeveloped countries.

1.2.3. MEANING OF AN UNDERDEVELOPED ECONOMY

But what is an underdeveloped country (UDC) ? It is hard to define. No two so-called countries are alike in all respects. Each is a class by itself. The economists differ on the issue of defining underdeveloped countries. Each one of them has tried to define an underdeveloped country by taking into consideration and emphasizing some particular characteristic of the underdevelopment. The result is that a comprehensive definition incorporating all the features of an underdeveloped country is not available.

There can be two approaches available for a solution of the problem of definition of an underdeveloped country.

- 2.3.1 by analysing the definitions given by some of the leading economists.
- 2.3.2 by consideration of such criteria of underdevelopment as incidence of poverty, ignorance, diseases, mal-distribution of the national income, administrative incompetence, social disorganisation etc.
- 2.3.1 Here is presented an analysis of a few of the definitions. According to Meier, "An underdeveloped country is one which is extremely poor relative to other economies. In ranking of the countries of the world by real income per head, the underdeveloped countries would be at the bottom." A U.N. Publication says, an underdeveloped country is one "in which per capita real income is low when compared with per capita real income of the U.S.A., Canada, Australia and Western Europe." Both these definitions treat per capita real income as the test for underdevelopment. If it is relatively low in comparison with the real income per capita in the advanced countries, the country, can be said to be an underdeveloped one. These countries want to get rid of their poverty, but are unable to do so though they have potentialities for economic development.

Paul Hoffman prefers to enumerate some of the basic features associated with underdeveloped countries rather than to give a straight definition. The overall essence of this attempt is to underline poverty as a distinctive characteristic of underdeveloped countries. But poverty alone may be an insufficient condition of underdevelopment. If a country has inadequate resource base, it may be poor and yet may not be underdeveloped. It may have fully used its scarce resources and may still be poor.

Prof. Ragnar Nurkse considered shortage of capital as the main reason for underdevelopment. He says that underdeveloped countries are those which, "compared with the advanced countries are unequipped with capital in relation

to their population and natural resources.” His definition is unsatisfactory as he is inclined to ignore the fact that economic development has much to do with human element, social and economic attitudes, political conditions and historical accidents.

The definition given by the Indian Planning Commission lays stress on “existence, side by side of unused or under-used manpower and unexploited natural resources.” This definition does not give reasons why manpower and resources remain unutilised or underutilised in these countries. It ought to have taken notice of inadequacy of capital and lack of entrepreneurial ability to make it a satisfactory definition.

Bauer and Yamey say, “Underdevelopment refers to a low level of economic and technical achievement.”

For Jacob Viner, “An underdeveloped country is one which has good potential prospects for using more capital or more labour or more natural resources, or all of these, to support its population on a higher level, or if its per capita income level is already very high to support a larger population or not a lower level of living.”

Buchanan and Ellis’ definition of underdevelopment, emphasizes poor economic performance as shown by low levels of consumption and material well-being. They have also tried another approach to define an underdeveloped country on the basis of industrialisation. For them a country is underdeveloped, if the ratio of industrial output to total output or of industrial population to total population is low.

The preceding discussion makes it clear that it is not an easy task to define an underdeveloped country. But here is a broad agreement that all low income countries may be defined as underdeveloped countries. And low income is to be attributed to low availability of capital to such a country.

1.2.3.2. Definitions by taking into consideration the criteria of underdevelopment:

It may be said at the outset that there is a lot of overlapping in both the attempts to define an underdeveloped country. A satisfactory definition can only be one which is based on all the characteristics of underdevelopment. But, to include all of them in a single definition, is a task almost impossible to achieve. Some of the important criteria which can be used for formulating the existing definitions are discussed below :

(i) **Ratio of population to land area** : This criterion is a vague one. It is difficult to decide whether a low or high ratio of population to area

will indicate underdevelopment. A country may have a small population spread over a large area. Vast areas of land may not be in use as in many African and South American countries. The ratio may, thus, be low yet the country can be underdeveloped. In case of countries like India and Pakistan, the ratio of population to land area is high, but they cannot be described as developed for this reason alone.

(ii) Ratio of industrial output to total output : A country which, according to this criterion has a low ratio of industrial output to total output falls in the list of underdeveloped countries. But with development, the ratio tends to increase. The increased ratio then is the result rather than the cause of development. In countries where agriculture is developed, existence of agricultural surplus leads to demand for industrial goods. If, however, the surplus income earned from agriculture results in creating urban industry, producing luxury goods, the ratio of industrial goods will increase, but incomes will not increase. The criterion, therefore, is not satisfactory to indicate development.

(iii) Low ratio of capital to (per head of) population : Capital shortage countries are usually taken to be underdeveloped countries. But capital shortage is not a satisfactory indicator of underdevelopment for the reasons given below :

- (a) Capital shortage is related not to the absolute size of the capital stock in the country, but to the population and to the natural resources.
- (b) The principle of marginal productivity tells that where capital in relation to other factors is scarce, its marginal productivity is high. This should apply to underdeveloped countries also. But the marginal productivity of capital in these countries may be low due to untrained workers, poor organisation, bad weather etc.
- (c) Taking only capital deficiency as a criterion of underdevelopment ignores the socio-economic factors like human development, political conditions etc. which have a vital role in development. Availability of capital is not the only condition for economic development.
- (d) Criterion of low per capita income is considered to be the most satisfactory indicator of underdevelopment. Countries with levels of per capita real income lower than per capita real income in the advanced countries are described as underdeveloped

countries. But even the low per capita real income criteria is an inadequate indicator of underdevelopment as it concentrates on only one aspect of underdevelopment, i.e., poverty. It ignores the development potential of the underdeveloped countries. Moreover, measuring per capita real income in the underdeveloped countries presents serious difficulties. The data are incomplete, inaccurate, unreliable and even misleading.

Self Check Exercise-1

1. What do you mean by an underdeveloped country ?

1.2.4. CHARACTERISTICS OF THE UNDERDEVELOPED COUNTRIES :

Numerous case studies in the past few decades have shown that the economies of no two underdeveloped countries are alike in all respects. But there are some characteristics common to them all. They help to reveal the nature of underdevelopment. Some of these characteristics are :

(i) General Poverty : Poverty is defined as the inability to attain a minimal standard of living. In underdeveloped countries, almost a third of the population-1.3 billion people-lives in poverty. More than a third of children are malnourished. Economies are divided among groups. According to 2009 Gross National Income (GNI) per capita, the groups are : low income (LIC) \$ 995 or less; lower middle income (LMC), \$ 996 - \$ 3945; upper middle income \$ 3946- \$12,195; and high income \$ 12,196 or more. A yawning disparity could be found among different sets of countries. Human Development Report 2005 observes that the richest 20% of the population hold three quarters of world income, the poorest 40% hold 5% of world income. The poorest 40% people live on less than \$2 a day.

The low per capita income is responsible for the low living standards of the people. They spend as much as 75 percent of their income on food while in the rich countries, it is only 20 percent of the income which is spent on food. Their food consists mainly of cereals. It is deficient in protein. Intake of protein in underdeveloped countries is 48 gm. per day, while it is 97 gm. in U.S.A. In terms of calories, the intake is only 2,000 in the underdeveloped

countries as compared to 3,000 in the advanced countries.

Not only ill-fed, the people of the underdeveloped economies, are ill-housed, ill-clothed and ill-educated. Poverty is their basic malady. The underdeveloped countries are the slums of the world economy.

(ii) Poor Quality of Human Capital : A glaring feature of an underdeveloped economy is the poor quality of human capital. Most of the underdeveloped countries suffer from mass illiteracy. Illiteracy retards growth. A minimum level of education is necessary to acquire skill. The expenditure on education, skill formation, research and improvements in health are included in human capital. Under the United Nations Development Programme (UNDP), countries have been ranked on the basis of Human Development Index (HDI). It is very distressing to note that on the basis of HDI India has been ranked at No. 119 while China stands at No. 89 in Human Development Report 2010.

(iii) Great Dependence on Agriculture with a Backward Industrial Structure : The much higher proportion of the people in the underdeveloped countries (UDCs) live in villages and agriculture is their main occupation. The average share of the labour force engaged in agriculture is more than 50 percent in UDCs compared with less than 10 percent in developed countries (DCs). Too much dependence on agriculture is a symptom of poverty. The small size of holdings, obsolete and outdated methods of production, lack of capital etc. lead to low yields and make agriculture unproductive. Even with the adoption of modern technology, the yields per hectare in countries like India compares unfavourably with the world average.

Agriculture in the underdeveloped countries produces mainly food stuff and raw materials. Some of the underdeveloped countries produce plantation crops like rubber, tea, coffee, sugarcane etc. They are, thus, primary sector economies. Labour productivity in agricultural sector is lower in developing countries than in the developed countries. The secondary (industry) and tertiary (services) sectors have remained poorly developed.

(iv) Dualism : The market economy and the subsistence economy exist side by side in the underdeveloped countries. One section in or near the towns and the other in rural areas. Market economy is ultra-modern with all the amenities of life like television, car, train, bus, medical and educational, computer facilities etc. Subsistence economy is backward and mainly agricultural.

In many of the underdeveloped countries, there are small pockets dominated

by foreign interests. They are highly capitalistic and are found in petroleum, mining and plantations. Profits earned by the foreigners flow out to their countries. Native labour spends its wages on imported goods. Their standard of living is higher than that of the workers in the subsistence sector. The country's resources are exploited for the benefit of the foreigners. Existence of such pockets make the economy triplistic in nature.

(v) Underdeveloped Natural Resources : The natural resources of the underdeveloped countries are either unutilised or underutilised or misutilised. Though they may be deficient in natural resources at present, it may be possible for them to overcome this deficiency in future either by discovery or by adopting new technological knowledge for use of the existing resources in a better way or find new uses for them. Potential resources of most of these countries are large. For example, India's total hydroelectric potential has been put at 41 m KW, but hardly 10 per cent has been utilised so far and large reserves of minerals await exploitation in these countries.

(vi) Population Growth : Population in the underdeveloped countries is increasing rapidly, substantially adding to the total population every year. The benefits of development due to improved technology and capital formation come to be swallowed by increased population and standards of living remain low.

Improvements in medicine, sanitation etc. have led to the lowering of death rates, while the birth rate continues to be high. The average rate of annual growth of population in underdeveloped countries was about 2.6 percent in the period of 1980-90 and 2.0 percent in 1990-2001 as compared to 1 percent and 0.7 percent respectively in developed countries.

High birth rates result in adding a large proportion of the total population in the younger age groups. It means a large number of dependents who only consume and do not produce. To support dependents, worker's power to save decreases, it becomes a problem to educate the children and to provide them with bare necessities, endangering the future social progress of these countries.

Shorter life expectancy in the underdeveloped countries causes great loss as a large number of young people die before they reach the prime of life. All the expenditures incurred in their rearing and education goes waste.

Density of population in agriculture is increasing rapidly with the growth of population. This is leading to overcrowding, over cropping, soil exhaustion, etc. impending economic progress.

(vii) Unemployment and Disguised Unemployment : Failure of industrial sector to expand makes it difficult for the growing numbers to find employment. In addition to this is the problem of educated unemployment in the towns due to lack of manpower planning. About 20 percent of the labour force is unemployed.

There is also lot of disguised or involuntary unemployment, particularly in agriculture. Some of them employed in agriculture are superfluous, but they cannot be withdrawn for want of alternative jobs. Estimates declare that in densely populated countries, disguised unemployment may be 25 to 30 percent of the labour in agriculture. These countries also suffer from other kinds of unemployment.

(viii) Economic Backwardness : Low labour efficiency resulting from poverty, occupational immobility of labour due to such factors as caste system, joint family, etc. are responsible for economic backwardness in the underdeveloped countries. Particular occupations are reserved for particular castes, religions, sex, race, etc. Traditional attitudes discourage full and proper utilisation of labour. Child and woman labour is exploited. Custom and tradition are supreme. Individualistic spirit is absent. Exchange by barter still exists though money economy is on the increase. Economic environment is not favourable to economic achievement and people remain economically backward.

(ix) Absence of Enterprises and Initiative : Underdeveloped countries lack dynamic entrepreneurship which Schumpeter considered as the focal point in the process of development. The social system inhibits entrepreneurship. Atmosphere is inimical to experiment and innovation. There is a small class of merchants who are interested in trading consumer goods. Whatever entrepreneurship exists, it tends to become monopolistic. Because of their contacts with political leaders, they enjoy a privileged position.

Foreign entrepreneurs have played an important part in the development of the underdeveloped countries. But their interest is solely to earn profits for themselves. The role of emigrant entrepreneurs has been no less important in the economic development of some of the underdeveloped countries. Indian and Chinese entrepreneurs have been responsible in skill formation and capital formation in a large number of countries of Asia, Africa and West Indies in America.

(x) Insufficient Capital Equipment : Not only the capital stock in the underdeveloped countries is small, but the current rate of capital formation

is also very low. It is only 20-25 percent of gross national income which is not enough even to cover depreciation of capital. In advanced countries, it is 30-40 percent. The root cause of low capital formation is low capacity to save due to poverty. The well-to-do upper income bracket consists of merchants and traders who invest in unproductive channels.

'Demonstration effect' can also be held responsible for reducing the power to save. The governments of these countries are also subject to the demonstration effects, as out of false ideas of prestige, they indulge in grand schemes which are adopted by advanced countries. These only cause harm and lead to wastage of resources.

(xi) Technological Backwardness : The backward state of technology in the underdeveloped countries is seen in :

- (i) high average cost of production despite low wages;
- (ii) low productivity of labour and capital;
- (iii) predominance of unskilled and untrained workers; and
- (iv) large amount of capital needed to produce the national output.

Technological backwardness is both cause and effect of economic backwardness. Technical backwardness is also due to use of different production methods used in the advanced and the traditional sectors of the economy. This technological dualism has accentuated the problem of technological unemployment in the industrial sector and disguised unemployment in the agricultural sector. Bad allocation of resources leads to structural disequilibrium which also result in technological unemployment.

(xii) Foreign Trade Orientation : Underdeveloped countries are generally foreign trade oriented. They export primary products and import consumer goods and machinery. Too much dependence on exports of primary products affects these economies adversely.

- (i) There is too much concentration on the production of primary products for exports to the relative neglect of the other sectors of the economy.
- (ii) Economy becomes very much susceptible to fluctuations in international prices. Depreciation abroad is transmitted to the exporting country.
- (iii) Concentration on export of a few items and shortage of consumer goods make these countries too much dependent on imports. Tendency to import more is accentuated by the demonstration effect.

In recent years, the capacity of underdeveloped countries to export has been declining, making them face adverse balance of payments situation. In other words, the terms of trade have been turning against them. External indebtedness is increasing.

Another result of foreign trade orientation is that foreign capital brought into these countries has tended to monopolise its position in certain selected fields like minerals, plantations, etc. Multinational corporations are expanding their activities. Hold of foreign capital drains their resources. Foreigners care only for their profits.

Self Check Exercise-2

1. Write three features of underdeveloped countries.

1.2.5. SUMMARY :

The whole world can be divided into two parts : (i) the developed countries and (ii) underdeveloped countries. Underdeveloped countries or less developed countries are also called developing countries. More than two-third of the world population lives in these countries. These are poor and backward countries. Their standard of living and per capita income is extremely low when compared with those of developed countries, such as UK, USA, Canada and West European Countries. Basic characteristics of underdeveloped countries are : general poverty, dependence on agriculture, pressure of population, underutilised resources, economically backward population, deficiency of capital, dependence on foreign trade. Some of the other features are crude and obsolete methods of production, illiteracy, social structure ridden by religious domination, castes and traditions etc.

1.2.6. LONG QUESTIONS

1. What is meant by an underdeveloped country ? What tests will employ for declaring a country to be an underdeveloped country ?
2. Throw light on the diverse structure of underdeveloped countries. Are

- their structural characteristics responsible for keeping them underdeveloped ?
3. How far can the course of development in the advanced countries serve as a guide to tackle the problem of the underdevelopment of the different underdeveloped countries ?
 4. What are the common characteristics of underdeveloped countries ? To what extent are they responsible for keeping them backward ?

1.2.7. SHORT ANSWER TYPE QUESTIONS

1. Define an underdeveloped country.
2. What is general poverty ?
3. What is technological backwardness ?
4. What is economic backwardness ?
5. Why is there absence of initiative enterprise in an underdeveloped economy ?
6. Define an underdeveloped economy. What are the features of an under developed economy?

1.2.8. BOOKS FOR STUDY

1. Meier, Gerald M. and Robert E. Baldwin : Economic Development
2. Dewett, K.K. and Satish Wadhwan : Economics of Growth and Development
3. Jhingan, M.L. : Economics of Development and Planning
4. Singh, D. Bright : Economics of Development

Determinants of economic development

- 1.3.1 Introduction
- 1.3.2 Objectives
- 1.3.3 Determinants of economic development
 - 1.3.3.1 Economic determinants
 - 1.3.3.2 Non-economic determinants
- 1.3.4 Summary
- 1.3.5 Key concepts
- 1.3.6 Long questions
- 1.3.7 Short questions
- 1.3.8 Books for study

1.3.1 INTRODUCTION

You have studied in lesson no. one that economic development means progressive changes in the socio-economic structure of a country. Rapid gains in overall growth in Gross National (Domestic) Product or per capita national (domestic) product, reduction in poverty and economic inequalities; and employment generation are the objectives of economic development. Economic development simply means the achievement of higher levels of real per capita income and improved conditions of living for common masses. While studying features of underdeveloped countries, we have seen that standard of living and per capita income in these countries is very low. People of these countries are not only ill-fed, they are ill-housed, ill-clothed, and ill-educated. As the process of economic development is a continuous process, it needs to create chain reactions of such forces which may set in motion the process of income generating and improvements in allocation, efficiency and distribution of available resources. This task can be influenced by a group of factors-economic, social, political, technological and administrative etc. Thus, economic as well as non-economic factors determine economic development of a country. Prof. Nurkse in his book, "Problems of capital formation in underdeveloped countries", stated, "Economic development has much to do with human endowment, social attitude, political conditions and historical accidents." In this lesson, we will make a detailed study of general economic and non-economic factors which govern the pace of economic development of a country.

1.3.2 Objectives :

After having gone through this lesson you would be able to :

- categorise the determinants of economic development into economic and non-economic categories.
- identify economic factors which directly influence the development of a country.
- specify the significance of non-economic factors which affect economic development of a country.

1.3.3 DETERMINANTS OF ECONOMIC DEVELOPMENT

There are resources which determine the outcome of the process of development and hence are also known as determinants of development. In fact, they condition development. The determinants of economic development can be classified as :

- a. Economic determinants and
- b. Non-economic determinants

(A) Economic determinants include which further economic resources include natural resources (land), human resources (labour), financial resources (capital) and organisational resources (entrepreneurship), it is only by their active cooperation and participation that the process of development is enabled to achieve its ends. These resources are not static, but dynamic in the sense that they change both qualitatively and quantitatively.

(B) The non-economic factors comprise such things as socio-cultural conditions in the country, social institutions, education, technology and the role assigned to the state. The right mix of these factors help to create a favourable atmosphere for economic development to take place.

Both sets of determinants have their own importance. The economic determinants provide the base on which the superstructure of development is raised. They must be present in a country for development to go on. But, it is only in the presence of the non-economic determinants which favour development that the best results can be achieved. In the absence of right type of aptitudes, abilities, etc., hopeful and encouraging results of development will not be forthcoming. Social institutions and political arrangements equally matter for the success of the process of development. The non-economic factors, thus, help to create a climate conducive to development. What is needed, therefore, is a harmonious blend of these two types of determinants to attain high level of economic growth.

It is only the relative importance of the factors that change. All other factors continue to be important in their own places. Development remains a joint effort. All of them have a part to play.

Let us explain these determinants in detail.

1.3.3.1. IMPORTANCE OF ECONOMIC FACTORS IN ECONOMIC DEVELOPMENT

The relative importance of different resources in economic development different in different types of economies. In case of economies of the agricultural stage, natural resources count as the most important; in a handicraft economy, skilled human resources acquire priority; in economies which have reached the industrial stage the place of primacy passes into capital or financial resources. At the stage of multinational and international corporations, it is the entrepreneurship or the organisational resources which is the most important.

(i) ROLE OF NATURAL RESOURCES : Natural resources consist of the gift of nature. They constitute a key factor in the economic development of a country. They are potential wealth, i.e., they possess the capability of getting converted into actual wealth. Their full exploitation and proper utilisation can help to accelerate the economic development of a country. They are a fundamental factor in the capacity of a country to expand.

The most important natural resources from the point of view of economic development are the land resources, favourable geographical situation, climate, fertile soil, water resources, fisheries, mineral resources, forest resources and power resources. Favourable geographical situation stimulates economic growth as it depends, to a considerable extent, on the course and volume of trade, location of industries, etc. A favourable climate is conducive to hard and sustained work. If climate is either too cold or too hot, it becomes an obstacle to economic development. Fertile soil ensures adequate supplies of food and raw materials. The major iron and steel producing states of the world have been richly endowed with coal and iron ore. The oil rich states have earned enormous wealth from this precious natural resource. Minerals provide raw materials for industries-engineering, chemical and other industries. Industries constitute the very essence of economic development. Existence of coal and iron is regarded as the foundation of the industrial structure of a country. Forests are of immense value for agriculture, industry and trade. They also help in conservation of the physical and climate environments.

The term natural resources does not refer only to the things that make up the physical environment. They also refer to the functions of satisfying certain human wants. Some of these resources may not be able to fulfil these functions by themselves alone. They may require the cooperation of certain other resources. An area of great scenic beauty in a country becomes a natural resource only if it is opened up by providing means of transport and setting up hotels & restaurants for tourists.

In the economic sense, therefore, natural resources are not given and static. They are dynamic in the sense that their abundance and scarcity depend on time, place, technology etc. Their quantum is variable. They are static if assessed at a point of time and dynamic if viewed over a period of time, it can be safely asserted that India today has far more natural resources than it had in 1947 at the time of independence.

Natural resources are not limitless and inexhaustible, it is, therefore, necessary that maximum benefit should be derived from them. They should be properly assessed and estimated and then utilised carefully & efficiently. Squandering them recklessly would be criminal as this would hinder country's economic development at some later stage.

The relationship of natural resources to the kind and level of technology is very intimate. An item currently as valuable as petroleum was of little or no significance earlier because necessary technology to exploit it was not available. It is only with the development of requisite technology that the various radio-active elements (thorium, plutonium, uranium etc.) have come to be regarded as highly valuable. Deposits of many minerals in the underdeveloped countries are not being used because of deficiencies of technology. Many potential resources came to be converted into actual high productivity resources with the discovery of suitable technology.

Resource availability and use are also determined by social attitude and institutional forces. Low agricultural productivity in the underdeveloped countries is largely due to land tenures which are not conducive to proper management of agricultural enterprises. A cultivator who is a tenant-at-will takes hardly any interest in taking steps to restore the exhausted fertility of the soil. On the other hand, if the cultivator is an occupancy tenant with secure tenure, he will be mindful of maintaining the fertility of his land and making improvements on it. It is best if the land is owned by the farmer.

A primary pre-requisite of agricultural and economic development in the underdeveloped countries is to implement land reforms with a view of ensuring

rational utilisation of land. Land reforms, to be sound, must be well-planned and there should be no laxity in implementing them. Eradication of poverty in the underdeveloped countries would not be possible without attaching top priority to land reforms. Control of population pressure is no less important to check land hunger and avoid social discontent.

The role of land resources in economic development is no longer treated as primary. It is now taken to be only secondary. Resource availability is no longer considered a sufficient condition for economic development. Resource scantiness is also no longer looked upon as retarding factor to economic progress. Many countries of Asia, Africa and Latin America (South & Central America) have a favourable ratio of cultivable land to population. They are also rich in industrial raw materials. Yet their national per capita income is much less than that of countries with less land and less raw materials.

It is also worth noticing that the relative role of natural resources in economic development tends to decrease as the economic development proceeds.

Abundance of natural resources certainly helps economic development. But their scantiness need not be a barrier. Japan, Israel and Switzerland have set the example. They have overcome deficiencies of natural resources through trade.

(ii) ROLE OF HUMAN RESOURCES : The importance of human resources in determining the level of economic development cannot be over - emphasised. They influence not only the nature and quantity of all other resources, but also determine the kind of economic climate within which all activity takes place. Their interaction with environment has effect on the size and quality of the natural resources. They also determine the rate of capital accumulation. They also play a role in deciding the type of technology, the models of organisation and the targets of production.

Human resources have a two pronged relationship with economic development as factors of production and as consumers. Increase in population adds to resources. But it also involves increased consumption. But technology can prevent any fall in per capita real income in the face of increase in population. Population growth actually plays a conflicting role in the development process. It acts both as a stimulus and an impediment to growth and development. So far as the developed countries are concerned economic growth and population growth are complementary to each other. But in underdeveloped countries where growth of capital and advances in technology are slow, increase in population generally means a decline in income and a fall in subsistence levels.

The supply of human resources depends upon two factors :

- (a) Size of Population
- (b) Quality of the Population

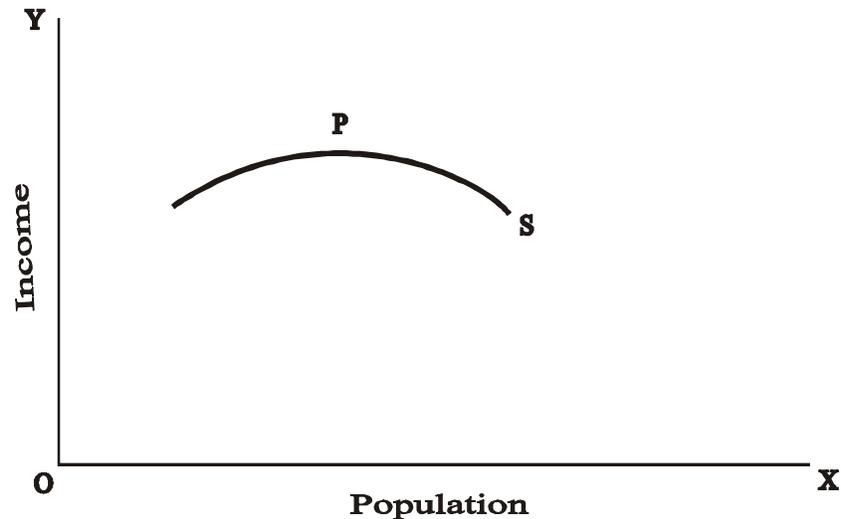
(A) SIZE OF THE POPULATION

T.R. Malthus wrote in 1798 that population tends to increase much faster than means of subsistence. By 'means of subsistence' we mean food and other necessities of life. More specifically, the means of subsistence increase in an arithmetic progression due to the law of diminishing returns, while population increases geometrically.

An arithmetic progression is a series of number in which the difference between two consecutive terms remain constant e.g., 2,4,6,8,10 and so on. A geometric progression is a series of number in which the ratio of each term to the preceding one is constant viz., 3,9, 27, 81,243 and so on.

This creates problem for an economy. Any increase in the means of subsistence would lead to an increase in population and generally bring about reduction in the per capita availability of the means of subsistence. The balance between the population and means of subsistence would be restored by the intervention of natural calamities like famines, wars, epidemics etc. Though Malthus thesis has proved incorrect in case of advanced countries due to rising economic standards acting as a check on growth of population, it holds true in case of the underdeveloped countries where increase in population neutralises gains of economic development.

The optimum theory of population is another attempt to establish a relationship between the size of population and per capita national income. It says that other things like techniques, tastes, resources and institutions remaining constant, there exists a population size that maximises per capita income. A smaller population will not be able to derive full benefits from the division of labour and economies of scale due to the limited extent of the market. A larger population leads to diminishing returns due to lesser resources available per worker.



(Point P on the curve shows the optimum population)

Attempts have also been made to relate increase in population and per capita availability of cultivable land. But none of the theories is completely satisfactory.

GROWTH OF POPULATION

Growth of population in a country depends upon the prevailing birth and death rates. If birth rate is higher than the death rate the population shows a tendency to increase. If death rate exceeds birth rate the population tends to fall. In case of advanced countries, both the fertility and mortality rates have fallen very low. They have reached almost near balance with the result that the population has almost been stabilised. On the other hand, in case of the underdeveloped countries, the birth rates have remained high, while death rates have declined considerably due to availability of better medical facilities, improvements in hygiene, control of famines, etc. The upshot is explosion of population. In India, for instance, birth rate has fallen but it is still as high as 28 per thousand. The death rate has fallen to about 8 per thousand. The result is rapid increase in population. Efforts to control birth rates in the underdeveloped countries through family planning campaigns have borne little fruit.

AGE STRUCTURE

The age structure of population in a country is important because it helps to determine the effective labour force. In underdeveloped countries, the percentage

of population in lower age groups (below 15) and old age groups (above 60) shown as dependents, is much more than that in the working age groups (15-60) and infant mortality rate is high. The social costs of labour in the case of these countries are also high.

(b) QUALITY OF POPULATION

Life expectancy, literacy rate, level of education, health facilities, employment availability, per capita income determine quality of population. To estimate the labour force potential, quality of population must be taken into consideration. Poor health, low levels of literacy and education etc. of the population place underdeveloped countries at a disadvantage relative to the developed ones. Quality of labour force in the former countries also suffers due to larger percentage of workers in the lower age groups where experience and efficiency are evidently low.

Besides the quantity and quality, the strength of the labour force also depends upon the manner it is put to use. In underdeveloped countries where primary production predominates, a larger percentage of population is employed in agriculture than in the developed countries. For economic development, it is considered necessary to shift a sizeable proportion of people from agriculture to industry, commerce and services. Quite a large number of people are either unemployed or are only partially employed. There prevails involuntary unemployment, disguised unemployment as well as potential unemployment. This reservoir of unemployed, according to Ragnar Nurkse, can be utilised for generating capital by finding suitable employment for them to produce surplus which can be exported or saved. This calls for sound management.

(iii) ROLE OF FINANCIAL RESOURCES :

Financial resources refer to funds which have either been already invested in enhancing production or are awaiting investment. It is an alternative term for the factors of production which the classical and neo-classical economists called 'Capital'. The funds may exist as 'sunk capital' which has already taken a form, or 'floating' capital which has yet to take a form. They are also referred to as 'fixed' capital which has taken a durable form of working capital which is meant to buy raw materials and meet day to day expenditures of business. Capital may be defined as "produced means of production." It means goods which have already been produced and are capable of being used for helping further production. The economic development of the advanced countries is largely attributed to their capital accumulation though the presence of certain other causes cannot be ignored. The deficiency in the supply of capital is

considered as the main culprit in keeping the underdeveloped countries underdeveloped. Capital shortage has prevented the latter from investing in overhead and social capital (roads, schools, transport and communications, public utilities, etc.) which are important for raising productivity.

Economic development is now-a-days treated as substantially a function of the supply of capital and the demand for it. Both the supply and demand sides are equally important. Supply of capital depends upon savings-private and public, and receipts of foreign capital from trade, aid and foreign investments. The demand for capital comes from the entrepreneurs. While available supplies of capital may attract entrepreneurs to start new enterprises, capital creation can also be the result of the demand by the imaginative entrepreneurs. Joan Robinson said, "It seems to be the case that where enterprise leads, finance follows." Thus, capital need not be the limiting factor in economic development in case of the capital shortage underdeveloped countries. venture-some entrepreneurs will stimulate venture-some owners of capital. Lack of capital will be made good through development of financial institutions.

SOURCES OF CAPITAL FORMATION

The process of capital formation involves three steps :

- (1)
 - (i) The power or capacity to save, i.e., the existence of a margin between income and expenditure which can be saved; and
 - (ii) The will to save i.e., the existence of urge or desire to save. Earning interest or income can be an incentive.
- (2) **Mobilisation of savings through financial and credit institutions.**
- (3) **Avenues for investment of savings, i.e., the demand and supply for investment purposes.**

The sources of capital formation can be classified as :

- (i) Domestic; and
 - (ii) External
- (i) Domestic sources are those which are available within the country. Some of the important domestic means to bring about increase in savings are :

Increase in national income or output will tend to raise the income of the people. This is possible by using existing and new techniques, employing resources more efficiently, utilising unused resources productively and introducing better division of labour.

The increase in income can be channelled into savings by organising savings. People may be persuaded to save in the interest of family, to marry off children or to make provision for old age. As saving is a matter of habit, once inculcated, it is likely to persist.

Financial institutions like banks, money and capital markets will help to channelise savings for productive investments. Rural savings can be captured for investment through rural banks organised on cooperative lines. Mobilised rural savings might lead to rapid development.

The role of government is also important in mobilising savings. The Government can add to the volume of savings with the help of fiscal and monetary measures. It can secure reduction in private consumption and transfer resources to itself for productive purposes through imposition of taxes. Prof. W.A. Lewis thinks that an underdeveloped country could appropriate 20 percent of its national income through taxation. Taxation could also be so arranged as to serve as an incentive to private enterprise to produce more. Progressive direct taxes, by taxing the rich at higher rates of taxation could help to make them reduce their expenditures on conspicuous consumption. They help to bring about a certain measure of equality of income by taking more from the rich and incurring public expenditures to benefit the poor. Indirect taxes, by adding to prices, discourage consumption and encourage general public to save.

It is also possible for government to divert resources from unproductive to productive channels through public borrowing. But the scope here is limited because of low level of income and savings in the underdeveloped countries. The government can also mobilise savings for productive investment in public enterprises as well as to provide credit facilities to private enterprise.

External sources or foreign capital such as loans, direct investment and grants and aid may be used to supplement domestic resources of capital formation. There is a difference between these categories of external capital in respect of their impact, the benefits which they confer and the strain which they cause on the economies of the receiving countries. Loans involve regular servicing costs in the form of interest payments and amortisation. Grants and aid constitute a net gain to the country into which they are flowing. But the precaution necessary in such cases is that aid should be without strings. Capital can also be brought into the country by building upon export surplus in its foreign trade. But an underdeveloped country has very little capital available for exports.

Another method available is to restrict imports by stopping imports of luxury

goods and importing only capital goods. A country should build up favourable terms of trade by exporting more and restricting imports, except capital and investment goods.

Capital, no doubt, has an important role in economic development, but the part played by such factors as political, social, cultural, technological and entrepreneurial cannot be neglected.

(iv) ROLE OF ORGANISATIONAL RESOURCES

The organiser, known in economic parlance as the entrepreneur, is a man (or a group of men) of first rate importance. He is credited with the performance of functions on which the success of business rests. It is he who decides what is to be produced, where is it to be produced and how is it to be produced? He plans the whole business from the start to finish. He decides the quantity and quality of the product. He selects and purchases machines. He coordinates the different factors of production. He decides the proportions in which the factors are to be used, so that the best results are attained.

The entrepreneur not only confines himself to policy decisions, particularly in large scale business. He has a distributive function as well. He remunerates the other factors of production. If there are losses, he has to bear it. This means that it is he who takes risks of business. As business has become more and more complex, so have his risks grown. Any miscalculation can result in the ruin of his business. Most of his risks are immeasurable and hence cannot be insured. Production these days, is carried on in anticipation of demand. It has also become time consuming i.e., much time elapses between the undertaking of production and putting up the product for sale in the market. Any misjudgement can be disastrous. Risk-taking is considered to be the entrepreneur's most important function.

According to Schumpeter, the main function of the entrepreneur is "innovation". He is a pioneer in his own line of business. He introduces new inventions, improvements, new products, etc.....in order to take advantages of cost reduction and increased sales. Innovation is now regarded as the most outstanding entrepreneurial function.

The difficulties faced by an individual entrepreneur to raise and invest large amounts of funds required by modern large-scale business, have led to the evolution and setting-up of new forms of business-partnerial, joint stock company, cooperative society etc. Various entrepreneurship functions are to be distributed among various people. For example, in case of joint stock company, the raising of capital comes to be done by banks, investment houses, insurance companies

etc. Personnel Manager looks after the recruitment of labour. Purchase Manager looks after purchase of machinery, raw materials etc. Supervision of production is entrusted to the Production Manager. The Board of Directors confines itself to policy decisions regarding innovations, risks to be borne etc. The decentralisation of functions leads to greater efficiency.

In case of the socialist countries and the public sector mixed-economy countries, the entrepreneur is the state. State provides funds, bears risks, decides about new production to be made.

Certain factors discourage entrepreneurship, particularly in the case of underdeveloped countries. They are the “social system” which denies opportunities for creating facilities. Traditional attitudes discourage full utilisation of human resources. Traditional trades and professions are favoured and new ventures are discouraged. People are divided according to caste, sex, clan and kinship. Capacity to do work is ignored. Inequalities in the distribution of wealth and income also hinder the growth of entrepreneurship. A few entrepreneurs engaged in the manufacture of consumer goods, in mines and in plantations, through political and personal contacts with the government officials, establish monopolies and do not let new entrepreneurs to come in. Lack of infrastructure like means of transport adds to the risks and stands in the way of the growth of entrepreneurship.

Entrepreneurship can be encouraged in the underdeveloped countries by bringing about suitable changes in the socio-economic structure of society and by promoting among people the right attitudes. Inculcating right motivation among people is essential. These motivations vary from society to society. Acquisition of profits, higher incomes and more wealth may serve as the motives. Prestige brought by success may motivate some people. But motivation alone will not work unless there is law and order in the country and a guarantee that people will enjoy what they laboured to own. The state alone can ensure this.

The state can create a “climate for entrepreneurship” through its political acts. It can establish financial institutions to collect savings and make them available to entrepreneurs for investment. It can set up engineering and training institutions to overcome shortage of trained workers. It can foster scientific and technical research and can arrange for the training of managers through institutes of business management.

If the entrepreneurs in a country are unable to develop a technology of their own, they can borrow well-established technology from the advanced

countries. Collaboration agreements with outside firms can be permitted by government to encourage entrepreneurs at home. Grant of subsidies, financial assistance, adoption of the policy of production, favouring home products for its own use are various devices which can help the promotion of entrepreneurial spirit in the underdeveloped countries.

What is really needed for the spirit of entrepreneurship to be forthcoming is the creation of a congenial environment, social, economic and political. Japan has been able to foster this spirit in its people without sacrificing its own culture. Such an effort can be followed by the other countries.

Self Check Exercise - 1

1. Write two economic determinants of economic development.

2. What does quality of population mean ?

1.3.3.2 SIGNIFICANCE OF NON-ECONOMIC FACTORS IN ECONOMIC DEVELOPMENT :

No doubt, economic factors play a very important role in determining economic development, but the part played by non-economic factors is not less important. The non-economic factors help to create an environment operating in which the economic factors are able to contribute their best to economic progress. Besides providing a right setting for the operation of the economic factors, the non-economic factors also help to modify and improve their quality and efficiency. But as a result of economic development they also undergo change. There is interaction between both sets of factors, economic and non-economic, as well as economic development.

Their relationship is not static but dynamic. The factors undergo qualitative change in the process of economic growth. The old attitudes and ideas undergo change with changes in the realization of the objectives of development.

So, non-economic factors have to be so managed as to be favourable to development. Not giving them their due weightage would affect development adversely. It would be wrong to assert that India remained backward economically primarily because it lacked required supplies of capital. The social evils associated with caste system, joint family system, laws of inheritance, illiteracy, superstitions, fatalistic beliefs etc. were no less contributory factors. Now you are going to study the major non-economic factors in detail which affect economic development.

(i) Socio-Cultural Conditions : Social and cultural relations have a great bearing on economic development. The cultural environment in the European countries produced in the people a spirit of enquiry and the desire not to accept any ideas which could not stand the test of reasoning. It also inculcated in their people the spirit of adventure-to go out and discover new lands, foster trade with distant countries and make new inventions. The result was the rise of a new merchant class, the members of which were eager and willing to take up the role of pioneers and to act as the spearhead in bringing out economic development. The social attitudes underwent changes. New expectations grew up. New organisations were set up and new values came to be imbibed. The will to save and invest increased. People became eager to undertake risks in order to earn. They understood that maximum profits could be had by maximising output for a given input. The result was the industrial revolution of the 18th and 19th centuries. To meet the demand for increased supplies of labour, people moved from villages to cities. Urbanisation, with all its consequences, good and bad, took place. New wants led to establishment of new industries. The industrial base expanded vastly. The new surroundings produced greater economic and religious freedom. This led to changes in social values and attitudes. The joint family system disintegrated leading to the establishment of the individual family. This gave a further fillip to economic development.

In the underdeveloped countries, some of the cultural and religious traditions are hindrance to economic growth. Religion to some extent, by favouring other worldliness, lessens the desire to work hard, to acquire more of worldly goods. People are swayed more by custom rather than competition. The desire to excel by working hard and sacrificing leisure is not so much in evidence as it is in the Western countries. Cultural attitudes hinder economic progress

by resisting desirable changes in the social, economic and political institutions. Without these changes, the country remains backward. The vicious stalemate cannot be done away with unless new attitudes providing motivation for development come to prevail.

For creating a proper atmosphere for economic development, social attitudes, values and institutions must undergo a change. This can be made possible through spread of education and knowledge. This will help people to have greater awareness of what they want, define their objectives and determine what amount of efforts will be needed to achieve these objectives.

Cultural changes in people are needed to enable them to cope with economic development. Social attitudes, family and class structure, racial and religious views etc. should be altered to assist the process of development. The adjustment should be smooth without causing any social upheavals. If these changes are blocked, economic development is likely to be halted.

(ii) Social Institutions : The expression institutions in this context means an organisation in society or culture. Social institutions, as an expression of culture, are critical for economic development. Adam Smith thought that economic development would follow if government provides “law, honesty, peace and easy taxes.” J.S. Mill added to this list, “improvement in public intelligence and the introduction of foreign arts.” The list, to be comprehensive, must extend beyond that given by these two eminent economists.

Many institutions which were once important have now outlived their utility. But they continue to maintain their hold on culture. It is difficult to dislodge them and even to modify them. This is true not only of such institutions as concern systems of land tenure, family organisation, religion, education, corruption etc., but also to those which related to patterns of production, distribution and consumption.

Another difficulty is posed by the predilections of the foreign experts from the advanced countries who try to reproduce in the underdeveloped countries those institutions they are familiar within their own countries. Developing countries should borrow foreign institutions with utmost care. Only those institutions can prove useful which can be adopted to the need and the culture of the borrowing country. Borrowed institutions are like ready-made clothes, they may fit without making any alteration. But most of the times, it is not likely that they will fit.

No two countries have identical cultural background. To say that a particular

situation in a certain country came to be dealt with successfully by evolving or modifying certain institutions, does not mean that similar situations in another country will respond to these institutions when they are transferred to the latter country. The cultural differences make all the differences. To be effective, the institutions used in a given country must fit both the economic needs and the cultural conditions.

But with economic progress some of the institutions have undergone changes. Caste bonds have loosened. Joint family is becoming a rare thing. It is being replaced by the nuclear family, too familiar in the West. Though the process may be slow, the economic progress itself proves effective to modify and alter the social institutions so as to adapt them to new conditions.

(iii) Human Capital Formation : It is now increasingly being realized that investment in human capital is even more important than adding to the stock of physical capital. Studies of economic growth in the advanced countries confirm the importance of investment in human element. They indicated that increase in output at a higher rate cannot be explained by increase only in the inputs of labour and capital. Part of the increase is to be attributed to the improvement in the human capital.

The knowledge possessed by the population and the capacity and training of the population to use it efficiently is now considered as an important part of the capital stock. Expenditure on (i) education and training, (ii) and health and nutrition contributes to productivity by raising the quality of the population. Such an expenditure also yields a continuing return in the future. Advanced countries invest a much larger proportion of their income on education of their population as compared to underdeveloped countries. The latter have done little to extend the capacity of the people to meet the challenge of accelerated development. The slow growth of knowledge is a serious check on progress. As human abilities are more favourable to economic development, it is necessary that people should be educated.

Professor T.W. Schultz attaches so much importance to education. He thinks that if a low income country comes to acquire overnight all the resources, equipments, techniques of production etc. equal to those per person in the USA, it would be able to do little for lack of necessary skills and knowledge of people. Imbalance between the stock of human and non-human (physical) capital would be too much. Experience of recent attempts by some underdeveloped countries to expenditure development through acquisition of large amounts of capital confirms Schultz's opinion that the effective use of physical capital is dependent upon human capital.

The case for investment in human capital has been gaining ground. Prof. Schultz suggests that for the improvement in human capabilities, the following categories of education should receive attention;

- 1 On the job-training, including old style apprenticeship organised by firms.
- 2 Formally organised education at the elementary, secondary and higher levels.
3. Study programmes for adults, that are not organised by the firms, including extension programmes in agriculture.

It is only with higher level of skill and much more knowledge that the people of an underdeveloped country can use more complex equipments and techniques obtained from advanced countries.

For accelerating development emphasis has to be on vocational and technical training and adult education rather than on expansion of literary type of education. Prof. W.A. Lewis thinks that experience in case of African countries shows that even universal primary education as a goal should expand gradually. He wants more expansion of secondary education as it is people with secondary education who can be managers, administrators, professional technicians, scientists, engineers, agronomists, doctors, economists, accountants etc. or sub-professional technical personnel (agricultural assistants, book-keepers etc.). Lewis characterises the products of secondary schools as “the commissioned and non-commissioned officers of the economic and social system.” He calls the products of these schools as the backbone of public administration.

There is also need for expansion of agricultural education in these countries as modernisation of agriculture is the utmost necessity in the fight against backwardness.

(iv) Technology : By technology is meant the emergence of new techniques as a result of the application of science to methods of production. These increase productive efficiency. The effects of technology are seen in changes in the production function.

Technological change is a change in production methods used in any enterprise or industry. It leads to more production with the same resources or the same amount of production with less resources. This may be in the form of a new product yielding more utility rather than just a large amount of an old product. The change may involve a variation in the type of physical capital, in the quality of labour, or in the organisation of these resources. The change in

organisation may introduce greater specialisation or permit stricter control. It is much easier today than in past for the knowledge of techniques to spread internationally. Many old restrictions have been gradually relaxed. But some of the difficulties still remain. For instance, the shortage of technically trained personnel in the underdeveloped countries limits the spread of more complex techniques.

A much more serious difficulty in the extension of technological changes to the underdeveloped countries lies in difference of the social set-ups of the advanced and the underdeveloped countries. The technological changes in the advanced countries were preceded by and also followed by sociological changes. The underdeveloped countries are not sociologically ready to accept and avail of the new techniques to any great extent.

For technological development, the following conditions are necessary :

1. need of large capital investment;
2. a scientific bent of mind on the part of the community;
3. availability of entrepreneurial skill of high order; and
3. expanding market for the new products to make possible commercialization.

These requirements clearly show why technological progress on a big scale is possible only in advanced countries. Existence of big firms competing among themselves also favours technical changes to be introduced.

Since the underdeveloped countries are capital shortage, the only possibility for these countries of increasing output with the capital available to them is to increase labour productivity by adopting techniques of production which do not require capital. Lack of research facilities, low level of effective demand, labour immobility, absence of specialization and unfavourable socio-political environment are also contributory factors toward their failure to make use of advanced technology.

It is not fair to conclude from the above difficulties that industrialisation or adoption of improved technology is not advisable in the underdeveloped countries. These countries can have economic growth alongwith small scale and medium industries by building up heavy industries. Imported technology can be so designed as to make the operations more capital saving and labour intensive. In the case of smallscale industries, the engineers and technicians of the underdeveloped countries should use ingenuity and skills to evolve new machines and new techniques of production to suit the requirements of

their countries. If possible, small industries should concentrate at focal points where they can be helped by the common facility services. As these countries back large supplies of capital, it should be seen that once a machinery is installed, the rate of utilisation is kept high. This is a capital saving device. If it is found that it is under-utilised, it may be worked by going in for multiple shifts. But the best means to solve the problem of technology in these countries is to develop new techniques appropriate to the factor endowment of these countries.

(v) State : The role assumed by the State in the economic development of the underdeveloped countries has become so important that it has come to be known as the “fifth factor of production.”

State action alone can bring about social and economic reforms which can create conditions favourable to economic development. It will have to provide heavy investments for creating social overheads like power, transport, education etc. which are essential for development. Private enterprises cannot be expected to invest in these fields as risks involved are great and profits low. State control is also essential for balancing the growth of different sectors of the economy.

It makes use of direct physical participation, direct and indirect physical controls, monetary and fiscal devices for this purpose. These measures also help in reducing economic and social inequalities which prevail in these countries.

Need for basic services like railways, roads, irrigation, electric supply, etc. is a must for economic development. As their development involves heavy investment and benefits from these are spread over a long period. State can provide these public utilities.

Illiterate and untrained persons do not succeed as efficient workers. It is necessary that there should be investment in them to make them productive. State can help to increase the productive capacity of the people through education. The education programme must provide primary schools, secondary schools, facilities for higher education like universities, training institutes for various needs etc. Expenditure on education on such a large scale can only be undertaken by the State in the underdeveloped countries. Expenditure on education is now taken to be as productive as expenditure on dams etc.

State, by undertaking measures to improve the health of people increase the productivity and efficiency of labour. Various measures such as improvement of sanitation, slum clearance, clear water supply, sewerage facilities, provision of medical and health services etc. have to be undertaken. Training facilities

for medical and health personnel have also been provided.

Suitable monetary and fiscal policies for helping economic development should be chalked out. Monetary policy should aim at controlling inflation and maintaining balance of payments to accelerate development. Central bank is the chief instrument through which the government works its monetary policy.

Fiscal policy is used by the government for reducing inequalities of income and wealth that increase with the development in the underdeveloped countries. Appropriate taxation, expenditure and borrowing policies are necessary for achievement of this end.

The underdeveloped countries are exporters of primary products and importers of capital goods and essential raw materials. They generally have adverse balance of payments and shortage of foreign exchange to effect necessary imports from abroad. Government can solve these problems by adopting export promotion and import substitution policies. It can also manage to remove balance of payments difficulties through foreign aid.

Thus, the State's role in economic development of underdeveloped countries is crucial. Without State's active participation in development activities, these countries will be doomed to remain underdeveloped.

Self-Check Exercise-2

1. Write the basic non-economic determinants of economic development.

2. "Role of state in Economic Development is crucial" Do you agree ?

1.3.4 Summary :

Economic development is a sustained effort persisted over a long period of time. The determinants of economic development can be classified into economic determinants and non-economic determinants. Economic factors include natural resources (land), human resources, financial resources and organisational resources. Non-economic factors help to create an environment in which economic factors are able to contribute their best to economic progress. Socio-cultural conditions, social institutions, education, technology, state are the non-economic determinants.

1.3.5 Key Concepts

- (i) Economic Factors : are availability of natural resources and their proper utilisation, population and human resources, financial resources or capital accumulation, organisational resources, availability of external resources etc.
- (ii) Non-economic Factors : comprise socio-cultural conditions, social institutions, education, technology, role of state or political organisations which govern the process of economic development in a country.
- (iii) Natural Resources : include the gifts of nature such as land resources, climate, fertile soil, water resources, fisheries, mineral resources, forest resources, power resources etc. satisfying human wants.
- (iv) Human Resources : mean size of population and quality of population. People with high standards of honesty, competency, knowledge and performance lead a nation towards rapid economic development.
- (v) Financial Resources : refer to funds which have either been already invested for furthering production or are awaiting funds.
- (vi) Capital Accumulation : Capital implies the stock of physical reproducible factors of production. The increase of capital leads to capital accumulation.
- (vii) Human Capital Formation : means investment in human beings. Expenditure on (i) education, training, skill-formation, (ii) and health and nutrition increase the quality of population.
- (viii) Technology : means the emergence of new techniques as a result of the application of science to methods of production.

1.3.6 LONG QUESTIONS

- (i) Discuss the importance of economic factors in economic development.
- (ii) Discuss the role played by non-economic factors in economic development.
- (iii) “For creating a proper climate for economic development, socio-cultural conditions in the underdeveloped countries must undergo change.” Discuss.
- (iv). What is meant by social institutions ? How do they affect economic development ?
- (v) Justify expenditure on education as a helping factor in economic development ?
- (vi) “Role of State in economic development is vital.” Discuss.

1.3.7 SHORT QUESTIONS

Write short answers on the following questions :

- (i) Human resources.
- (ii) Differentiate between economic and non-economic factors.
- (iii) Role of entrepreneur.
- (iv) How do non-economic factors determine economic development of a country ?

1.3.8. BOOKS FOR STUDY

- (i) G.M. Meier and R.E. Baldwin : Economic Development
- (ii) R.L. Goel : Economics of Growth and Development
- (iii) M.L. Jhingan : The Economics of Development and Planning.
- (iv) D. Bright Singh : Economics of Development
- (v) Charles Kindleberger : Economic Development

Capital Formation : ITS SOURCES

- 1.4.1 Introduction
- 1.4.2 Objectives
- 1.4.3 Capital Formation : Meaning and Process
- 1.4.4 Significance of capital formation
- 1.4.5 Role of capital formation in developed and developing countries
- 1.4.6 Causes of slow rate of capital formation in India.
- 1.4.7 Suggestions for increasing the rate of capital formation
- 1.4.8 Summary
- 1.4.9. Key concepts
- 1.4.10 Long Questions
- 1.4.11 Short Questions
- 1.4.12 Suggested Readings

1.4.1 INTRODUCTION

You have already read in lesson no. 2 and 3 that among the many factors responsible for underdevelopment, lack of capital formation is considered to be a factor of prime importance. It is, therefore, necessary that certain conceptual problems associated with capital formation be fully understood. Capital is defined as those goods resulting from economic activity which are used for further production of other goods. Colin Clark calls these goods as reproducible wealth used for purpose of production. They are produced means of production. Capital as distinct from natural resources, is man-made and its stock can be increased by human efforts.

Total domestic capital consists of :

- (i) Fixed Capital which is represented by all construction and improvement attached to the land together with machinery and equipment.
- (ii) Working Capital which is constituted by inventories and produce stocks available for further production.

The addition to capital stock in a given period of time represents capital formation during that period.

1.4.2 Objectives

After having gone through this lesson, you would be able to :

- define capital formation
- differentiate gross capital formation and net capital formation.
- justify the significance of capital formation
- discuss role of capital formation in developed and developing countries.
- list the main reasons for low capital formation in the developing countries.
- write suggestions for increasing the rate of capital formation in the developing countries.

1.4.3 Meaning and Process of Capital Formation

The term capital formation is used in two different senses :

- (i) In the wider sense, it includes all uses of current product contributing to a rise in national income, i.e., addition to construction, equipment, etc. but also expenditure on education, health, recreation etc. which adds to the efficiency of labour and raises the level of economic welfare of the community. Efforts have been made in recent years to estimate human capital formation as well. It refers to investment in the physical or material or tangible as well as impersonal or immaterial or intangible capital.
- (ii) Usually, the term is used in the narrow sense, and is confined to capital used for increasing national output. When used in this sense, it excludes all durable goods used by households, inventories of museums, works of art, etc. all sub-soil resources like minerals yet to be discovered and net changes in foreign investment. The last item is excluded because capital formation means only changes in the physical capacity of a country's economy.

Process of capital formation involves three stages :

- (i) Existence of savings in the economy i.e., aggregate production in a given period of time should be more than consumption.
- (ii) The mobilisation of the available savings through banks and other financial institutions.
- (iii) Conversion of the savings into investment. Investment is made

possible by savings in a given period. It is withdrawal of consumption and its incorporation in productive capacity.

Gross Capital Formation and Net Capital Formation

A distinction is also made between gross capital formation and net capital formation. The former refers to all capital stock added during a period. The latter is calculated after deducting allowance made for depreciation, obsolescence and accidental damages to fixed capital. The rate of gross capital formation in a year is the ratio of gross capital formation to gross national product. On the other hand, the rate of net capital formation is the ratio of net capital formation to the net national product or net national income, it is well-known that the rate of gross capital formation as between developed and underdeveloped countries does not vary. But the rate of net capital formation in the developed countries is much more than in the underdeveloped countries. This is because the expenditure on replacement forms a larger fraction in the latter than in the former countries.

As already seen, capital grows out of savings. The volume of savings depends on the level of money income of the people. If income is low, most of it is consumed by expenditure on bare necessities of life and, therefore, the volume of savings must necessarily be small. Higher the income, larger will be the volume of savings. But this may not always be so. People may prefer to consume rather than save. How much will be saved will depend upon a variety of motives and circumstances.

Motives which induce an individual to save are several. Firstly, prudence may motivate a person to save with a view to have a reserve against unforeseen contingencies. Secondly, he/she may like to save to make an adequate provision for the education of his/her children or the marriage of his/her daughter or for his/her old age. This motive of foresight weights much with most people. Thirdly, a person may be activated to save because of the desire to raise his standard of living. Fourthly, he/she may like to have sufficient amount behind for the maintenance of the family. Fifthly, people may save because money gives power and adds to the pride and prestige of a person. Lastly, a person saves because he/she is a miser and is led by the motive of avarice.

All the motives enumerated above, i.e., prudence, foresight, improvement of standard of living, family affection, pride and avarice determine the will of person to save.

A large part of the propensity to save exercises a big influence on the volume

of savings. But the capacity to save is equally important. People can save only if there is a surplus available, i.e., the incomes are more than expenditures.

Self-Check Exercise-1

1. Define capital formation.

1.4.4. SIGNIFICANCE OF CAPITAL FORMATION

Capital formation is one of the main factors on which economic development depends. Ragnar Nurkse is of the opinion that it is only through capital formation that the vicious circle of poverty can be broken in the underdeveloped countries. Low levels of income in these countries lead to deficiency in demand, production and investment. This results in deficiency of capital goods which can be made by capital formation. Increase in capital goods expands the scale of production. This is increased investment in social and economic overheads. In turn, there is fuller utilisation of available resources. As a result, the size of national output increases. More income leads to more employment. More goods are produced, leading to further increase in income. This leads to more savings and more capital formation. The vicious circle of poverty gets broken. This is, in a nutshell, the importance of capital formation.

To discuss the importance of capital formation in a little more detail we may say that it is an essence of economic development which adds to capital equipment on a sufficient scale to increase productivity in agriculture, industry, mining etc. Capital is also required to provide schools, hospitals, roads, railways etc. In other words, capital is needed to provide economic and social overheads. This is possible if a community devotes a smaller proportion of its income to consumption and saves more of it for investment in capital equipment.

Increase in investment in capital equipment increases production as well as employment opportunities. Capital formation helps to increase technical progress by providing equipment to realise the economies of large scale

production and increase specialisation. It helps labour to get better tools and machines and, thus, adds to its efficiency. This helps to deal with the vicious circle of poverty from the supply side.

Capital formation by creating economic and social overhead capital helps to remove market imperfections. The resulting expansion of the market makes it possible to attack the vicious circle of poverty from the demand side.

Rapid capital formation is the only solution to achieve economic development in over-populated underdeveloped countries. Increase in per capita output in these countries is related to the increase in capital-labour ratio. But while aiming to raise capital-labour ratio, the countries face two difficulties.

- (i) With increase in population, the capital labour ratio falls. To set off the fall, large net investment is needed.
- (ii) With population increasing fast, the required amount of investment may not be forthcoming due to insufficient savings. Low per capita income keeps the propensity to save at a low level in these underdeveloped countries.

To get out of this difficulty the rate of capital formation must rise rapidly.

Domestic capital formation is also the solution to the problem of adverse balance of payments faced by the underdeveloped countries. The problem arises because these countries export primary products like raw materials and agricultural products and import manufactured and semi-manufactured capital goods. They must cut down imports by setting up import substitution industries and diversify their exports by producing all sorts of consumer and capital goods.

Capital formation helps in making a country self-sufficient and enables it to reduce the burden of foreign debt. Borrowing from foreign countries for long periods saddles a country with a heavy burden. Debt charges go on rising with every loan. Debt repayment necessitates heavier taxes. This increases the burden of taxes on the people. Capital flows out of the country. Capital formation also helps to make an underdeveloped country free from the need of foreign aid.

Capital formation can free an underdeveloped country from the strains of inflationary pressures. With a rise in capital formation, the output of agricultural products and manufactured consumer goods tends to increase. In the short period, it is not possible to equate increase in demand with increase in supply. Inflationary pressures arise in the economy. But if there is a steady rise in capital formation in the long run, the supply of goods is

augmented and the inflation controlled.

Capital formation is closely linked with the welfare of the people of the underdeveloped countries. It helps these countries to properly exploit their natural resources. Different types of industries are set up and varied wants of people come to be satisfied. Their consumption comes to consist of variety of commodities. Their standard of living rises. Their economic welfare increases.

Last but not the least, any increase in the rate of capital formation raises the level of national income. Increase in capital formation results in increasing national output which, in turn, raises level of national income.

Thus, capital formation is the master key for unlocking and releasing all the forces which can help to solve the complex problems of the underdeveloped countries.

1.4.5. ROLE OF CAPITAL FORMATION IN DEVELOPED AND DEVELOPING COUNTRIES

One of the way to study the important part played by capital formation in economic development is to examine historically its role in some countries becoming developed and others remaining underdeveloped. Taking England which was the pioneer in ushering in the changes summed up as the industrial revolution, as a model, it is possible to show how its economic development at every stage up to quite recent times was made possible by capital accumulation. It has been a case of interaction between capital formation and economic development, one forcing a head on other and, thus, setting up an ascending spiral.

With the birth of a new industry in the country i.e., the cotton textile industry there came the opportunity for investment in Europe in the early 16th Century. It was the shortage of labour in the yarn spinning section which was sought to be overcome by the invention and introduction of machinery first worked by manual power, then by water power and still later by steam power. Supply of yarn on a big scale led to application of machinery in the weaving part of industry and later of sizing, calendering, printing etc. Machinery made of wood soon got replaced by one made of iron. This led to changes in the iron and steel industry. Coming of steam and need to melt iron from the ore with the help of coal revolutionised the coal industry. The revolution spread also gradually to chemical industry. Application of steam engine with modifications to means of transport brought in steamships and railways. Later on oil and electricity replaced coal as source of power.

Use of machinery led to division of labour, specialisation and mass production of standardised goods. Production of more goods needed more raw materials. There were more imports of cotton. In response to supply of goods, need for markets was felt. Colonies were to absorb these products of machines. Trade expanded and there was a wide extension of markets.

But all these changes required more and more supplies of capital. Trade profits enlarged possibilities of savings and capital formation. Scope for investment was extending fast. The upward spiral worked. More capital formation results in more expansion of industry, more trade, more savings, more capital formation and so on, except during periods of recession when activity slackened due to expectations going wrong.

Moreover, besides widening of the capital base, industry also experienced capital deepening. Extension of application of machinery to more and more industries led to widening of capital. And the invention of better and more efficient machines and their extension to process and sub-process in an industry meant deepening its base. Thus, demand for capital continued to grow. Supplies kept pace with demand for increased capital formation. Supply even outstripped demand so that the English Capitalists started exporting capital to set up industries, plantations and to construct railways etc. It was also lent to other nations.

Capital formation, thus, lay at the root of English economic development. But being a pioneer, England proceeded ahead with the method of trial and error. There were mistakes, involving big losses. Other countries which followed England on the path of industrialisation had an advantage as they could adopt the latest machines and techniques which had been evolved in England after much experimentation. Germany and U.S.A. did not have to undergo sacrifices to learn these techniques. They benefitted from England's experience. Capital formation in these new arrivals on the scene of industrialisation surpassed that in England.

As industrialisation spread to more and more countries and also covered wider fields as the result of coming into existence of new industries, demand for capital formation intensified. Three stages in the demand for capital can be identified. When industrialisation was confined to primary industries, demand came to be large. But when with the progress of industrial growth, secondary industries came to be covered; demand for capital formation became much more intensified. At the third stage of the supply to tertiary sector, the demand for capital formation grows rapidly.

The experience regarding economic development in the developing countries

cannot be dissimilar to that of the developed countries. They are starting at the stage when they are experiencing great dearth of capital. As they proceed to the second stage when they start manufacturing producers goods the demand for capital formation magnifies. This happened in India. Insufficient domestic resources availability is made good by imports of foreign capital in one form or the other. While following the general course of industrial development, as in the developed countries, economic, cultural, social and other differences are sure to make them deviate in certain important respects.

Self Check Exercise - 2

‘It is only through capital formation that vicious circle of poverty can be broken in underdeveloped countries.’ How ?

4.6 CAUSES OF SLOW RATE OF CAPITAL FORMATION IN DEVELOPING COUNTRIES WITH SPECIAL REFERENCE TO INDIA

The developing countries suffer from a low rate of capital formation. They lack those factors which are responsible for capital formation. As mentioned earlier, the three stages of capital formation are :

(i) availability of savings-unless there are savings available in economy the question of capital formation will not arise, in fact, capital formation flows from savings.

(ii) availability of institutions to help the mobilisation of savings. Cooperative societies, banks, insurance companies etc. help to mobilise savings which then become available for investment.

(iii) availability of opportunities for investment. Unless there are opportunities for capital to be invested, savings will not be of any productive use.

It is the unsatisfactory state of these three stages of capital formation that the developing countries are deficient in capital accumulation. While the

rate of capital formation ranges from 30-40 percent in the developed countries, it is found to be as low as less than 30 percent in the case of most of the developing economies.

Gross domestic capital formation is an index of the level of investment in the economy. From this point of view, it can be stated for India that whereas gross domestic investment was 10 percent of G.D.P. in 1950-51, it reached to a level of 30 percent of GDP in 2004-05. But judged by international standards, India can legitimately claim that the rate of domestic saving and investment is fairly high. But these increases are in money terms. Inflation has been a big contributory factor. The capital formation in real terms has not been rising much. However, to sustain a higher growth rate and in the context of rising population, the present rate of capital formation is not adequate. No doubt, gross domestic savings (which were increased from 24% in 2002-03 to 29% in 2004-05 and 33.7% in 2009-10) and gross domestic capital formation have been improving, but a lot yet needs to be done.

The following are the main reasons for low capital formation in developing countries :

(i) Low Income : The national output is low so is the national income. The consequence is that per capita income is low. At the same time, the propensity to consume is very high. It is close to unity. Almost the whole of income is spent on consumption. The margin of saving being low, the rate of capital formation is also low.

(ii) Low Productivity : The rates of increase in national income, saving and capital formation in the developing countries are low because the levels of productivity are low. The productivity is low due to lack of efficient labour, capital, technological knowledge etc.

Productivity levels in India, as compared to those in the developed countries, continue to remain low and there is not any perceptible increase in them mainly in agriculture, in certain regions of the country. Low productivity is mainly due to technical and institutional factors.

(iii) Population Growth : The developing countries besides being already overpopulated are having high rates of population growth. Increase in population neutralises the gains of economic development. Per capita income remains small. Saving remains low. Capital formation is low. Percentage of children in total population is high. The heavy expenditure in supporting them also reduces the scope for saving. Lack of capital formation keeps efficiency of labour low.

Population in India has been rising fast. It was 38 crores in 1951 and rose to 121 crore in 2011. Birth rate still continues to be as high as 22 per thousand. Annual death rate has fallen to about 6.4 per thousand. Addition to population every year is substantial. This high increase in numbers is a basic reason for the country's poverty.

(iv) Lack of Enterprise : The small size of the market, shortage of capital, unskilled labour etc. retard enterprise leading to low rate of capital formation.

(v) Lack of Economic Overheads : Deficiency of economic overheads in the developing countries discourages investment and enterprise on which capital formation depends to a large extent.

(vi) Deficiency of Capital Equipment : Not only capital stock is low, but capital equipment is also deficient. Sometimes it is a problem in the underdeveloped countries to replace worn out and obsolete capital equipment. This keeps capital formation at a low level.

(vii) Inequalities in Income Distribution : There are extreme inequalities in the income distribution in the developing countries. The majority of the people are living at subsistence level and are not in a position to save. The upper strata of society comprises only a small percentage of the population (3 to 5 percent). Its savings mostly get invested in unproductive uses. Capital formation remains low as real investment is not much.

Glaring inequalities in the distribution of income has persisted over years in India. Estimates of inequalities vary. The upper crust appropriates a highly disproportionate share of national income, while the vast majority is ridden in poverty. Inequalities also vary from region to region and between occupations. These also vary between rural and urban areas.

(viii) Small Size of the Market : Small size of market also keeps the rate of capital formation in the developing countries low. It hinders growth of enterprise and restricts economic development. Low incomes of people mean low demand for goods. Low demand limits the capacity of the people to absorb more goods. This means low investment and as a result low capital formation.

(ix) Lack of Financial Institutions : Inadequate savings for investments is also a serious lag in capital formation. Underdeveloped countries lack these facilities. This deficiency in India is being made good through opening large number of bank branches, setting up of industrial and financial institutions and organising stock markets.

(x) Deficit Financing : Resort to deficit financing in the developing

countries for financing development has invariably proved disastrous. It has led to inflationary pressures in the absence of matching increase in output. High prices mean reduced savings as people have to spend more to meet their ordinary requirements. Reduced savings lead to reduced capital formation. Five year plans in India have relied heavily on deficit financing. The technique of deficit financing should be employed as a last resort and with caution.

(xi) Demonstration Effect : Demonstration effect is an important reason, according to Nurkse, for the low rate of capital formation. There is an urge, in almost everybody to imitate the standard of living of his neighbours. Similarly, there is a tendency in the underdeveloped countries to emulate the higher consumption standards of developed countries. People like to spend the increment in incomes on goods of conspicuous consumption. This reduces savings and capital formation.

Capital formation is bound to lag behind needs of development so long as economic and technological backwardness persist in the developing countries.

Self Check Exercise - 3

Write down three causes of slow rate of capital formation in developing countries.

1.4.7 SUGGESTIONS FOR INCREASING THE RATE OF CAPITAL FORMATION IN THE DEVELOPING COUNTRIES WITH SPECIAL REFERENCE TO INDIA

Capital formation is an important determinant of economic development. To bring about increase in capital formation in developing countries the two sets of measures are advocated.

- (a) measures to increase the propensity to save of the people in the low income groups;
- (b) measures to make use of current savings for capital formation.

The sources of capital formation may be classified as (i) domestic or internal

and (ii) foreign or external.

(i) Increase in National Income : To increase the per-capita income of the people, it is necessary to increase the national income. This can be done by making use of the existing techniques and using resources more efficiently by utilising resources lying idle or unused and by introducing increased division of labour.

(iii) Organising Drives to Popularise Saving : This is necessary to augment savings. Concrete efforts in the form of propaganda and social education are needed for this purpose. Saving is a matter of habit. People can be made to inculcate this habit through propaganda. Saving can be facilitated if the government issues savings certificates, bonds and annuities. High rates of return can serve as incentives to people to invest in them. Most of these devices are used in India. The postal savings certificates with different terms to suit different people, lucky draws on savings accounts with post office issuing of postal insurance policies, granting tax exemptions on these investments are quite popular. Saving officers have been appointed to popularise and collect savings. Gold bonds have also been tried.

(iii) Setting up Financial Institutions : This is necessary to curb the habit of hoarding unspent incomes in gold or ornaments by the people in the developing countries. Banks, by ensuring high degree of safety, attract deposits. Establishment of capital and money market are also measures that help to mobilise savings for productive purposes. Various schemes of insurance, compulsory provident fund, opening of mobile banks in rural and industrial areas, cooperatives at various levels-primary and apex, are also some steps in this direction.

Much attention has been paid in India in recent decades, particularly after nationalization of the Reserve Bank, State Bank and important commercial banks to open more and more bank branches in areas which did not have these facilities before. Capital markets which were previously confined to Presidency towns of Calcutta, Bombay and Madras have now been organised in other important towns also.

(iv) Maintaining Income Inequalities : It has been suggested as it favours savings. This might have worked in U.K. in the 18th and 19th centuries. But current equalitarian ideology makes it impossible for this suggestion to be accepted. And where is the guarantee that the rich will save and invest in production and not in satisfying their craze for foreign goods of conspicuous consumption.

(v) Raising Profit : It has been advocated by Prof. Lewis. He says that the ratio of savings to national income is a function of the ratio of profits to national income. So he wants the adoption of measures to increase the profit part of national income. This will require expansion of capitalistic sector. Profits can also be increased by giving subsidies to capitalists, tax rebates, providing adequate supply of raw materials, equipments etc. But the danger is that these steps might lead to the creation of vested interests and cause mal-distribution of resources within the community. Social unrest and conflict can also be the result of adopting such a proposal.

Subsidies paid to well-off farmers for electricity, fertilisers, insecticides and pesticides have created a vested interest which resists stubbornly any attempt on the part of the government to withdraw or modify these concessions. This is also true in case of industrialists who benefit from protective duties and other concessions.

(vi) Fiscal Measures : Fiscal and monetary measures in the developing countries can help governments to mobilise savings to affect capital formation. These measures may be in the form of a budgetary surplus through taxation, reduction in government expenditure, raising money through public borrowing and even by deficit financing. The governments can also increase savings by running public enterprises more efficiently so as to earn large profits. A long-term savings policy can also be effective by encouraging development and, thus, automatically increasing saving as development proceeds ahead.

Deficit financing or inflation is a convenient method for capital formation. It is taxing people in the dark. As prices rise people go for forced savings as a number of goods go out of their reach. But the difficulty with inflation is that it leads to further inflation, rising prices still further leads to social discontent and unrest. A controlled measure of inflation can help development and savings. But how far can it be kept under control is a question difficult to answer.

(vii) Utilisation of disguised unemployed labour has been proposed by Prof. Nurkse. Such unemployed workers whose marginal productivity in agriculture is zero can be shifted to constructive projects like construction of roads in the neighbourhood while they are fed and provided tools and shelter from the farms where they had been working earlier. These projects when completed, will raise output, income and saving. The idea looks convincing in theory, but to what extent can it be put into practice is difficult to answer.

(ii) External Sources :

Foreign aid, restriction on imports and favourable terms of trade may be useful to supplement domestic sources of capital formation.

(i) Foreign Aid : Foreign capital in the form of loans or grants “without strings” may be necessary for capital formation in the developing countries in the absence of domestic resources. But the best way is to have “joint ventures”. The foreign investors bring capital and technical knowhow. They also train local labour and enterprises. Capital can also be imported from abroad by building up an export surplus. But the difficulty is that developing countries are unable to export more atleast in the initial stage of development.

(ii) Restricting imports of consumption goods, particularly luxury goods, can help to increase foreign exchange at the disposal of a developing country to import capital goods needed for its development. If consumers start spending more on imported consumer goods, the domestic savings will not be available for buying or producing capital goods.

(iii) Favourable Terms of Trade : If terms of trade move in favour of a developing country, it is in a position to import more capital goods. It is necessary that the increase in domestic income from large export earnings is saved and invested for productive purposes.

Capital formation, thus, is an important factor or the key to development. But this does not mean that political, social, cultural and other factors do not exercise their weight in development.

1.4.8 Summary :

You have read in this lesson that capital formation is used in narrow sense as well as in a broader sense. In a narrow sense, it means physical capital stock which includes machines, machinery etc. In a broader sense, it refers to human capital formation also. Capital formation is the key factor in economic development of a country. Capital formation helps-to break vicious circle of poverty; to increase productivity in key sectors of the economy; to increase production and employment; to remove market imperfections; and solve the problem of adverse balance of payments and many other problems. Rate of capital formation is low in many underdeveloped countries due to low per capita income, low levels of productivity, high rate of population growth, deficiency of economic overheads, small size of market etc. You must have noted that by increasing the per capita income of the people, augmenting saving habits, mobilizing savings for productive purposes, setting up financial

institutions etc. are the measures suggested for increasing capital formation in the developing countries.

1.4.9 Key Concepts

Capital Formation - The addition to capital stock in a given period of time represents capital formation.

Capital - is a produced means of production or we can say that goods resulting from economic activity which are used for further production of other goods is capital.

Human Capital Formation - is the process of increasing knowledge, skill and capacities of all people of the country. In other words, investment by the society in the field of education, skill, health etc. which adds to the efficiency of labour is human capital formation.

Physical Capital Formation : consists of tangible goods like plants, tools, machinery; instruments and inventories.

Gross Capital Formation - refers to all capital stock added during a period.

Net Capital formation - is calculated after deducting allowance made for depreciation, obsolescence and accidental damages to fixed capital from gross capital formation.

A Foreign Aid - is foreign capital in the form of loans or grants without strings.

1.4.10. LONG QUESTIONS

1. What is meant by capital formation ? Discuss the process of capital formation.
2. Why is the rate of capital formation slow in the case of underdeveloped countries ?
3. What measures can be adopted for increasing capital formation in the developing countries ? Discuss with special reference to India.
4. Discuss the importance of capital formation in economic development.

1.4.11. SHORT QUESTIONS

Write short answers on the following questions :

- (i) Define capital formation.
- (ii) Differentiate between physical and human capital formation.
- (iii) Stages of capital formation.
- (iv) Sources of capital formation.

1.4.12. SUGGESTED READINGS

1. M.L. Jhingan and others : *Economics of Development and Planning*
2. R. Nurkse : *Problems of Capital Formation in under-developed Countries*
3. K.K. Dewett and Satish Wadhawan : *Economics of Growth and Development*
4. G.M. Meier and R.E. Baldwin : *Economic Development*

**Nurkse's TheORY of Disguised Unemplolyed Labour and Lewis
Theory of Unlimited Supply of Labour**

- 1.5.1 Introduction
- 1.5.2 Objectives
- 1.5.3 Nurkse's Thesis of Disguised Unemployed Labour
- 1.5.4 Lewis Theory of Unlimited Supply of Labour
- 1.5.5 Summary
- 1.5.6 Key Concepts
- 1.5.7 Questions for your practice
- 1.5.8 Books

1.5.1. Introduction

The problem of rural over-population is a characteristic feature of the densely populated peasant economies that stretch all the way from south-eastern Europe to South-eastern Asia. Chronic and large unemployment in agriculture is common in this type of countries. There is a tremendous waste of labour and as we know labour is the source of all wealth. The situation as visualised by Keynes is that the problem of underdeveloped country is one of underemployment rather than of unemployment; it is primarily agricultural rather than industrial; the phenomenon is chronic rather than cyclical. Moreover, the incidence of unemployment spreads widely over the bulk of population instead of being concentrated among a relatively limited number of workers. In the words of Gunnar Myrdal, "An extreme under-utilisation of labour is generally understood to characterise South Asian countries. The average output of labour force is very low. It is low partly because much of labour force is idle either completely or for a large part of the day, week, month or year." The credit of introducing the concept of disguised unemployment in the theory of economic development goes to Rosentein-Rodan. It was elaborated by Ragnar Nurkse. Nurkse's thesis implies that this unutilised labour force can be used for the purpose of capital formation. Prof. Lewis has presented a theory of economic development with unlimited supply of labour. Prof. Lewis has tried to explain that economic development depends upon capital accumulation due to unlimited supply of labour.

1.5.2 Objectives

After having gone through this lesson, you would be able to :

- explain meaning of disguised unemployment.
- understand Nurkse's thesis of disguised unemployed labour.
- list at least five difficulties in taking the surplus people off the land and setting them on capital projects.
- critically examine Lewis' theory of unlimited supply of labour.
- differentiate capitalist sector and subsistence sector as explained by Lewis.
- present diagrammatically the process of growth, while shifting labour having zero MP in subsistence sector to industries.

1.5.3. NURKSE'S THEORY OF DISGUISED UNEMPLOYED LABOUR

1.5.3.1 MEANING OF DISGUISED UNEMPLOYMENT :

Disguised unemployment generally exists in the following forms :

- (i) Employment of people in a number larger than that required for doing the job, and
- (ii) Employment of people in less productive works than they are capable of doing i.e., under-utilisation of skills.

Ragnar Nurkse uses the term in the former sense. Whereas Mrs. Joan Robinson uses it in the latter sense. It is the Nurksian concept which has greater validity in underdeveloped countries as distinct from Mrs. Joan Robinson's concept which is more applicable to the developed industrialised countries. In its strict sense, disguised unemployment means that given the techniques and productive resources, the marginal productivity of labour in agriculture over a wide range is zero in over-populated underdeveloped countries. It is, therefore, possible to draw some surplus labour from agriculture without reducing total farm output. In the words of Ragnar Nurkse : "The underdeveloped countries suffer from large scale disguised unemployment in the sense that even with unchanged techniques of agriculture, a large part of the population engaged in agriculture could be removed without reducing agricultural output". This is the definition of the concept of disguised unemployment.

1.5.3.2 MAIN CHARACTERISTICS OF DISGUISED UNEMPLOYMENT :

- (i) It is chronic and not cyclical.

- (ii) It is related more to self-employed family workers than to wage earners.
- (iii) It exists due to the shortage of complementary factors like capital, skill, etc. and not due to the deficiency of effective demand. This can be illustrated with the help of the diagram-1

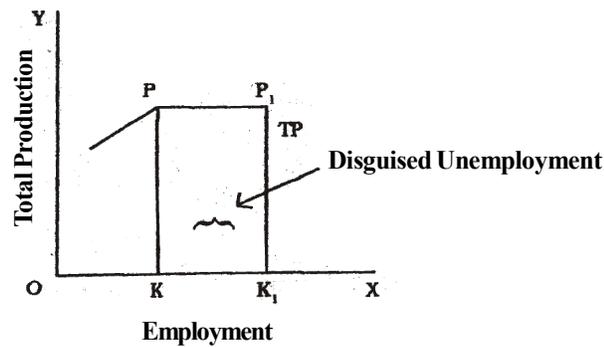


Fig. 1

OX measures employment and OY measures total production. When employment is increased up to OK, total production increases but it becomes constant beyond it. Total production is KP when employment is OK and it is K_1P_1 when employment is OK_1 . As $KP = K_1P_1$ the addition made to total product by KK_1 labourers is zero, i.e., marginal productivity of these labourers is zero ($MP = 0$). Therefore, KK_1 is disguised unemployment.

Prof. A.K. Sen views disguised unemployment in a different way. According to him, the marginal productivity of labour is not zero. "It is not that too much labour is being spent in the production process, but that too many labourers are spending it." Disguised unemployment, thus, normally takes the form of a smaller number of working hours per head. Prof. Sen explains his point of view with the help of the following diagram. (Fig. No. 2)

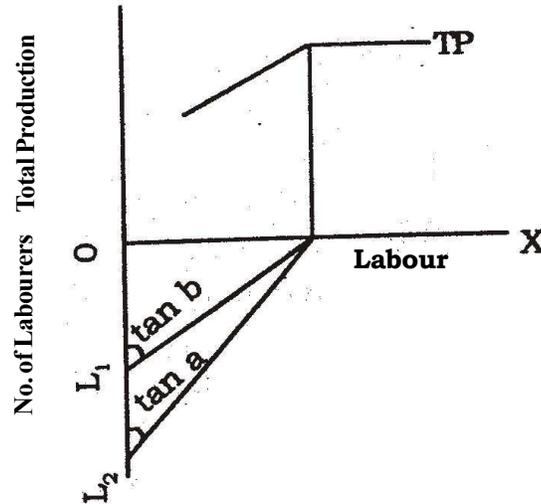


Fig. 2

TP is the total product curve which becomes horizontal when OL labour hours are employed. It means that beyond OL labour hours the marginal product of labour is zero and it is not worth while employing more. However, the number of labourers supplying for agricultural operation is OL_2 and each labourer works for $\tan a = OL/OL_2$ hours. But the working hours required per labourer are $\tan b = OL/OL_1$ and it needs only OL_1 labourers to supply OL labour hours. Thus, L_2L_1 labourers are disguisedly unemployed.

1.5.3.3. DISGUISED UNEMPLOYED LABOUR AS A SOURCE OF CAPITAL FORMATION:

Now let us consider the possibility of taking the surplus people off the land and setting them to work on capital projects-irrigation, drainage, roads, railways, houses, factories, and so on. Two problems that arise at once are :

- (i) How are people to be fed when they are set to work on projects of this sort ?
- (ii) How are these various forms of capital formation to be financed ?

The first problem can be solved to some extent by (i) voluntary savings (ii) by taxation, and (iii) even by importing foreign capital, yet the magnitude of the problem requires that it should be self-financing. The disguisedly unemployed labourers on the farms are presently being supported by the productive labourers on the farms. When they are shifted from the farms the latter are

doing 'virtual' savings since they are producing more than they consume. If the productive farmers working on land continue to feed their 'unproductive' dependents working on capital projects, "then their virtual savings would become effective savings." In this way this scheme can be self-financing only if the mobilisation of concealed saving potential is 100 percent successful. Nurkse says, "It seems to be a question of all or nothing. Either the whole of the food surplus that becomes available on the land through the withdrawal of the surplus labourers is mopped up to feed the unproductive labourers in their new occupations or nothing can be done at all. The loophole in the system is that there may be some leakages from the food fund that becomes available for capital formation. Some examples of the possible leakages are given below :

- (a) The newly employed workers may start consuming more food than they were consuming at the farms;
- (b) The peasants left behind on the farms may themselves start consuming more food than before; and
- (c) The problem of bearing the cost of transporting food from the farms to the capital projects involves some expenditure.

It is not possible to plug these leakages fully. Nurkse suggests that this can be done by complimentary savings in other sectors of the economy by state action in requisitioning the surplus food stocks from the peasantry and even by meeting the deficit from imported food stocks. He also stresses the need for imposing indirect taxes on commodities that enter into the peasants budget; taxation in kind or tax on land owners and on their rents may further help in mopping up food surplus. Nurkse was of firm belief that "Whatever the machinery employed may be, some form of collective saving enforced by the state may prove to be indispensable for the mobilization of saving potential implicit in disguised unemployment."

Secondly, there is the problem of providing finance for tools and equipments to be used by these workers. It is helpful to have some capital goods industry co-operating with the current labour employment to produce more capital goods. This is quite a distinct problem of financing in real terms. The transferred workers, before they start building a piece of fixed capital such as roads could after all, sit down and make the most necessary primitive tools with their own hands or we can say starting if need be from scratch. They could make their own shovels, wheelbarrows, carts, hoists and other things to help them build the roads. That is what they might have the advantage of being able to get capital goods through trade. Even without any foreign aid or foreign

lending, capital goods can be acquired from abroad in exchange for current exports, but it is clear that an act of domestic savings is required in this case.

The densely populated countries in the process of development do not need tools and machines of the same degree of capital intensity as those used in the advanced economies where labour is relatively scarce. Some of the equipments and hence also the techniques of production imported from more developed countries are likely to be highly capital intensive and; therefore not well adapted to countries where capital is scarce and labour is abundant. In over-populated agricultural countries, in building a road, for instance, it would be fantastically uneconomic to equip each worker with a bulldozer. Much simpler tools and equipments may be appropriate to the relative factor endowments of countries of this type, in early stages of industrial development. We can sum up in the words of Maurice Dobb, "Hands would move from the village to the new construction sites; with the hands would also move mouths; and with less mouths to feed in the village the possibility would be created for food to move out of the village to supply the needs of a swollen army of construction workers, without any fall in consumption on the part of those remaining in the village." Hence Nurkse's conviction was true that there is concealed saving potential in rural disguised unemployment in over-populated underdeveloped countries that can be effectively utilized as a means of capital formation.

1.5.3.4. LIMITATIONS OF THIS CONCEPT :

1. Nurkse assumes that the marginal propensity to consume of the newly employed workers and of those left on the farms will remain constant. But it is not really true.
2. Nurkse has not visualised the problems connected with the mopping-up of savings and distribution of food surplus. He does not pay attention to the practical problems that might arise because of it.
3. Kaldor is of the view that in underdeveloped countries farmers produce for subsistence rather than for profits and the amount of agricultural products supplied to the non-agricultural sector tends to be governed by the need for industrial products. Since the demand for industrial products in this scheme will be reduced, the marketable surplus will also be reduced.
3. The attachment to family, land etc. leads to difficulties in mobilizing the disguisedly unemployed workers.
4. Lewis comments, "Unpaid labour may be very important in countries

- which resort to compulsory labour, but its scope in other countries is limited.”
5. This scheme of things can be more successful in totalitarian states.
 6. The proposition in this thesis would give rise to the problems of inflation and balance of payments because demand is created ahead of inflation.
 8. Kurihara is of the opinion that unskilled labour cannot increase the output of fixed capital which is of crucial importance for industrialization.
 9. Kurihara also criticizes Nurkse's doctrine on the ground of its technological neutrality. During the process of industrialization, it will set a limit to the full mobilization of the disguisedly unemployed labour in the economy.
 10. A rapidly growing population aggravates the difficulty of increasing the rate of capital formation in two ways :
 - (i) Continuously growing unproductive labour force eats up its benefits;
 - (ii) Disguised unemployment grows at a faster rate than it can be absorbed.
 11. The surplus labour force can be used to create only social overhead, but not in Directly Productive Activities (DPA) which are more significant from the point of view of economic development.

We can conclude from the above discussion that the existence of disguised unemployment and its use as a concealed saving potential is based with a number of difficulties and has little practicability in countries which have adopted a democratic way of living.

Self Check Exercise - 1

1. Define disguised unemployment.

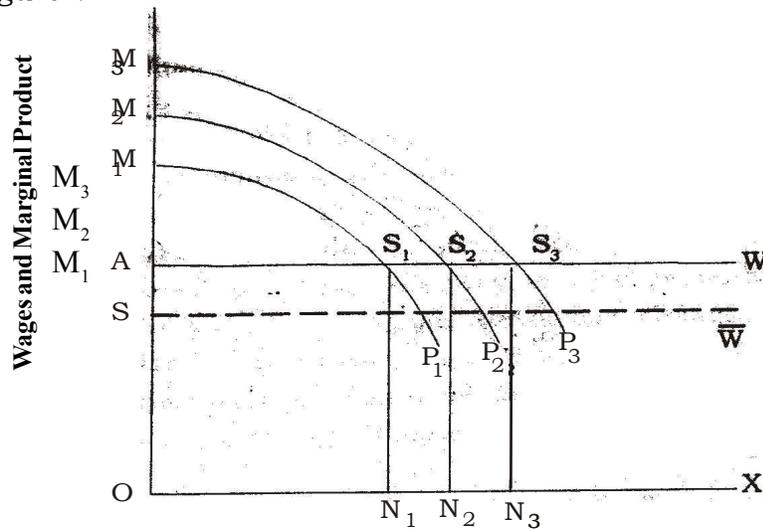
2. Write down 4 difficulties while using disguised unemployed labour as a source of capital formation.

1.5.4. LEWIS' THEORY OF UNLIMITED SUPPLY OF LABOUR :

W. Arthur Lewis in his well known article "Economic Development with Unlimited Supplies of Labour" has developed a systematic theory of growth in underdeveloped countries of today. He begins by asserting that many underdeveloped countries conform to the classical model in which the supply of labour is perfectly elastic at current wage rates. He explained it by categorising the economy into two sectors : (i) Capitalist sector, (ii) Subsistence sector. The "window cruse" of workers consist of farmers, casual workers, petty traders, domestic retainers and population growth. He labels it as subsistence sector. On the other hand, the capitalist sector is "that part of the economy which uses reproducible capital and pays capitalists for the use thereof." The current wage is what labourer earns in the subsistence sector. Of course, the industrial employers are interested in skilled labour. Lewis argues that labour skills are only a "quasi-bottleneck." If you have unskilled workers, you can convert them into skilled ones.

According to this thesis, the process of growth will take place as shown in

following figure :



Quantity of Labour Employed

Fig. 3

Here \bar{W} is the productivity per man-hour in the subsistence sector and W is the conventional wage in the capitalist sector. The marginal productivity of labour in industry is M_1P_1 which permits the capitalist to earn a surplus AM_1S_1 . When he invests this surplus because of improving techniques at the same time, the curve of marginal productivity shifts to M_2P_2 and so on. The per capita income of workers and peasants remains unchanged and all the benefits of development accrue to the capitalist.

Lewis points out three situations in which the process might halt :

(a) If the expansion of the industrial sector is rapid enough to reduce the absolute population in the rural sector, raising the man-hour productivity in that sector and so raising W and \bar{W} but reducing the difference between the two : this will not happen if the population multiplier is operating.

(b) If the technological progress in the rural sector raises productivity and so raises W and \bar{W} .

(c) If the terms of the trade turn against industrial sector with rising prices of food and raw materials and so bring a rise in W and \bar{W} (this is the classical model).

The achievement of balanced growth and generally higher living standards require that the process must be halted by either method (a) or method (b) while, at the same time, measures are taken to continue investment in the

industrial sector.

Role of the State and Private Capitalists :

Lewis says, "The central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 percent of its national income or less, converts itself into an economy where voluntary saving is running at about 12 to 15 percent of national income or more. This is the central problem because the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital)." He further observes, "The indigenous private capitalist is bound up with the emergence of new opportunities, specially something that widens the market associated with some new technique which greatly increase the productivity of labour and hence the capitalist surplus. The state capitalist, on the other hand, can accumulate capital even faster than the private capitalist since he can use for his purpose not only the profits of the capitalist sector, but also what he can force or tax out of the subsistence sector." Thus, once a capitalist sector has emerged it is only a matter of time before it can become sizeable. If very little technical progress is occurring, the surplus will grow only slowly. But if for one reason or the other, the opportunities for using capital productively increase rapidly, the surplus will also grow rapidly and with it will grow capitalist class.

Capital Formation through Bank Credit :

It is not only profits which generate capital, the bank credit also creates capital. In the words of Lewis, "Inflation for the purpose of capital formation is a very different kettle of fish. It is self-destructive. Prices begin to rise but are sooner or later overtaken by rising output, and may, in the last state end up lower than they were at the beginning." Lewis illustrates his point of view with an example : suppose an investment worth \$ 100 a year is financed through a bank. It yields \$ 20 a year as profit of which \$ 10 a year is saved. Then if capitalist invests an extra \$ 100 a year, all of which in the first year is financed out of credit, by the eleventh year profits will be \$ 200 a year greater, saving will be \$ 100 a year greater and there will be no further monetary pressure on prices. All that will remain from the episode is that there will be \$ 100 more useful productive capital at work than there would have been if the credit creation had not taken place.

A Critical Appraisal

- (1) The theory is based on the assumption of the existence of unlimited supply of labour in the economy. But in reality it is not so for all economies. For example, in case of many countries

of South America, the supply of the labour is scarce.

- (2) The wage rate does not remain constant in the capitalist sector as assumed. The wage rate continues to rise over time.
- (3) Lewis assumes that the surplus of the capitalist sector is reinvested in productive capital. But if the productive capital happens to be labour saving, it would not absorb labour and the theory breaks down.
- (4) Lewis assumes the existence of unskilled labour and unskilled labour is considered only a temporary bottleneck, but it requires a very long time to overcome this problem.
- (5) Lewis model is based on the assumption that a capitalist class exists in underdeveloped countries. In reality, such enterprise and initiative is conspicuous by its absence in the majority of underdeveloped countries.
- (6) It presupposes the working of the investment multiplier which is not operative in underdeveloped countries.
- (7) Lewis ignores the problem of aggregate demand. He assumes that whatever is produced in the capitalist sector is either consumed by itself or is exported. He does not even analyse the possibility of the capitalist sector selling its products to the subsistence sector. In case, it so happens, the growth process may come to halt much earlier through unfavourable terms of trade or the subsistence sector adopting new techniques of production to meet the expanding raw material's demand of the capitalist sector.
- (8) High wage rate in the capitalist sector cannot mobilize the surplus labour from the subsistence sector to the capitalist sector. People are attached to their family, relatives, property, language, customs, traditions etc.
- (9) Schultz says that it is wrong to assume that the marginal productivity of labour in the subsistence sector is zero. Therefore, it is not possible to know the exact number of surplus labourers.
- (10) It is not possible that agricultural production will remain unaffected if a substantial portion of labour is withdrawn from the agricultural sector. The productivity may fall with the migration of labour from the agricultural sector.
- (11) The presumption that only the capitalist sector does the savings

is wrong. Lewis himself admits that in the case of Japan people with low incomes also save.

- (12) Lewis' view that inflation for the purpose of capital formation is self-destructive, is difficult to believe in the face of acute shortage of consumer goods.
- (13) Lewis' contention that it will be possible to mop up increase in incomes through taxation, cannot be accepted because the tax administration in underdeveloped countries is not so efficient.

Lewis' model has many limitations, but it is important from the point of view of underdeveloped countries because it takes into consideration existence of surplus manpower which is a reality in many of these countries even today.

1.5.5 Summary

In this lesson, you have studied that in underdeveloped countries most of the labour is partially unemployed and hence they can be said to be in the state of underemployment or disguised unemployment. In this situation, the major part of labour force makes negligible contribution to the output. Nurkse's theory of disguised unemployment states that this surplus labour can be withdrawn from agriculture and employed anywhere without affecting adversely the agricultural output. Rather it will be a source of capital formation. However, the problems of the feeding of the workers transferred from land to capital creating projects and financing the tools have been addressed to by Nurkse. The obstacles which come in the way of practical working of this thesis are many. Lewis has presented a theory of economic development with unlimited supply of labour. He explained it by categorising the economy into two sectors. The theory has been criticised on many grounds.

1.5.6. Key concepts

Disguised unemployment : employment of people in a number larger than that required for doing the job.

Capitalist sector : that part of the economy which uses reproducible capital and pays capitalists for the use thereof.

Subsistence sector : is that part of economy which does not use reproducible capital. Marginal productivity of labour is negligible or zero.

1.5.7 LONG QUESTIONS

- (i) Explain the concept of 'disguised unemployment'. How can it be used as saving potential? What are the limitations of this proposition ?
- (ii) Critically examine Lewis' model for mobilisation of unemployed labour for capital formation.

SHORT QUESTIONS

- (i) Define 'disguised unemployment.'
- (ii) Capitalist sector.
- (iii) Subsistence sector
- (iv) Role of state and private capitalists in capital formation

1.5.8 BOOKS FOR STUDY

- 1. M.L. Jhingan : Economics of Development and Planning
- 2. R. Nurkse : Problems of Capital Formation in Underdeveloped Countries
- 3. W.A. Lewis : The Theory of Economic Growth

THE CLASSICAL THEORY OF ECONOMIC GROWTH

1.6.1 INTRODUCTION

1.6.2 OBJECTIVES

1.6.3 THE CLASSICAL THEORY

- 1.6.3.1 Explanation of the Theory
- 1.6.3.2 Propositions
- 1.6.3.3 Summary of the Classical System
- 1.6.3.4 Stationary State
- 1.6.3.5 A Critical Appraisal

1.6.4 SUMMARY

1.6.5 QUESTIONS FOR YOUR PRACTICE

1.6.1 INTRODUCTION

Growth theory went through a period of unusually rapid development from the 1940s to the 1960s, but economists' concern with the question of economic growth goes back at least as far as 1776 to Adam Smith. Adam Smith is regarded as the foremost classical economist. His monumental work '*An Enquiry into the Nature and Causes of Wealth of Nations*' (1776) was primarily concerned with the problem of economic growth. He advocated removal of all governmental restrictions so as to permit greater specialization and expansion of markets. Smith's successors Ricardo, Malthus and Mill continued to concern themselves with the problems posed by the former though they narrowed the scope of their enquiries. The writers of the classical school, thus include, Adam Smith, David Ricardo, T.Robert Malthus, J.B. Say and James Mill.

1.6.2 OBJECTIVES

After going through this lesson carefully, you should be able to :

- explain the basic concepts of classical theory of economic growth.
- know the views of different classical economists about economic growth.
- understand propositions of classical model.
- describe the stationary state.
- critically examine the classical theory of economic growth.

1.6.3 THE CLASSICAL THEORY

The classical economists showed keen interest in the study of economic growth and tried to find the answer of the question "how does the growth of an economy occurs ?" In the classical theory of economic growth, the race between the

technological progress and population growth leads to the development of capitalistic economy. In this race, technological progress would be in the lead for sometime, but ultimately a state of simple reproduction would come in. Thus, the classical theory visualised a transformation from a progressive state to a stationary state. Let us see the views of different classical economists.

Smith's Theory : First of all, we will discuss the views of Adam Smith, who is considered to be the father of economics, about the development of an economy. He emphasised labour as an important factor of production alongwith land and capital. He regarded labour as father and land as mother. Smith also recognised the importance of technological development for improvement in productivity. Adam Smith believed that principle of division of labour was responsible for all progress in the society because it increases the productive power of labour. He was of the view, "for the extension of division of labour, capital accumulation is necessary and hence saving is a necessary condition for economic development. Trading, which widens the extent of market, is another condition necessary for division of labour. Once development starts, it tends to become cumulative because with the given adequate market possibilities and the basis of capital accumulation division of labour takes place which raises the level of productivity and income of the people." According to Smith, "any increase in capital stock in a country generally leads to more than proportionate increase in output on account of continually growing division of labour." It permits larger savings out of increased income, greater capital formation and results into more development.

Although Smith emphasised the cumulative nature of the development process, he maintained that there were limits to expansion possibilities. According to Smith, as a capitalist economy progresses, the increase of stock, which raises wages, tends to lower profits. In the beginning, capital stock is small and the rate of profit is high, wage rates are also high. But as more capital is accumulated, the rate of profits falls. Despite increasing returns, it is the tendency of profits to fall that leads an economy into stagnation. The main points in Smith's idea of growth are specialisation of labour, capital formation, non-interference of the government and expansion of the market.

Ricardo's Views : Smith's model of growth remained the predominant model of classical growth. David Ricardo modified it by including diminishing returns to land. David Ricardo gave his views on the various aspects of economics in his book *Principles of Political Economy and Taxation* (1817). According to Ricardo, the capitalists initiate the process of economic development in the society by reinvesting profits and, thus, increasing capital formation. Capital accumulation takes place continuously as long as the rate of profit is above some minimum level. So, as long as rate of profit is positive, the process of capital accumulation will continue and the economy will progress. The labour force will grow proportionately and the total wage fund will increase and population continues to grow as long as the workers receive real wages above their customary minimum wages. Wages are determined by the subsistence theory of labour. Wages must rise as the production of food is subject to diminishing returns. This squeezes the profit rate in agriculture

and industry. Low rate of profit reduces the rate of capital formation. So these opposite tendencies retard the process of capital accumulation. The development receives a set back, there is no further increase in capital and economy enters in to a stationary state.

Ricardo's theory is more pessimistic than Smith's. The ultimately dismal scenario was shown by T.R. Malthus.

Malthus' Contribution : Malthus was mainly concerned with the problem of population growth and considered population growth as an end product of the whole process of economic development. Population growth encourages development only if it brings an increase in effective demand. The demand for labour depends on the rate of capital accumulation. He regarded capital as indispensable to development. According to him, "No permanent and continued increase of wealth can take place without the increase of capital." The main source of capital accumulation is higher profits and they come from the savings of the capitalists because workers are too poor to save. If the capitalists save more and spend less on consumer goods in order to have higher profits, economic growth will be retarded. He suggested a level of 'optimum propensity to save for economic growth. Up to a certain point, saving is needed to finance investment for which profitable opportunities exist. Beyond this point, saving will reduce consumers' spending to such an extent that it will create deficiency of effective demand, which creates the situation of over-production and it leads to fall in prices, profits, savings, investment and capital accumulation.

1.6.3.1 Explanation of the Classical Theory of Development

The Classical Theory can be briefly explained as follows :

- The classical economists believed in laissez faire policy, i.e., the existence of an automatic free market, perfectly competitive economy which is free from any government interference.
- All classicists regarded capital accumulation as the key to economic progress. They, therefore, laid emphasis on larger savings. According to them, only capitalists and landlords were capable of saving. The working class gets wages equal to subsistence level.
- According to classicists, profits induce investment. The larger the profits, the greater the capital accumulation and investment.
- The classical economists explained growth process in terms of technological progress and population growth. Technological progress remains in lead for sometime, but finally it disappears when there is a tendency of profits to decline. The reason, according to Smith, is increase in wages due to competition among capitalists. Whereas, according to Ricardo, when wages and rent rise with the increase in price of corn, profits decline.
- All classical economists visualised the stationary state at the end of the process of capital accumulation. They were of the view that when once profits start declining, this process continues till profits become zero, population and capital accumulation stop increasing and the wage rate reaches the subsistence level.

1.6.3.2 Propositions

Benjamin Higgins in his book '*Economic Development—Principles and Policies*' has translated the basic propositions of the classical theory of growth into a series of mutually consistent and interacting propositions or, in mathematical terms, into a set of simultaneous equations.

Proposition 1 : The Production Function

According to classical economists, total output (O) depends on the size of labour force (L), the stock of capital (Q), the amount of land available (K)—the supply of known resources or the amount of natural resources and the level of technique or available technology (T). (Q) is constant because it cannot be increased quantitatively, but its quality can be improved by advanced technology.

This can be written as : $O = f(L, K, Q, T)$ (1)

(Output is function of size of labour force, the stock of capital, the amount of known resources and the level of technique).

In simple words, we can say that total output depends on (i) the size of the labour force, (ii) the supply of land, (iii) the stock of capital, (iv) the proportions in which these factors are combined and (v) the level of technology.

Classical economists were aware of the importance of the entrepreneurial function, but they didn't make it a strategic part of their system. So, Higgins omitted the entrepreneurs' role from this model.

Let us see what happens to output where land is fixed and the labour supply is increased. This is shown in Fig. 1. The solid gross national product line shows the usual four phases : increasing marginal returns, decreasing marginal returns, decreasing average returns and decreasing total returns.

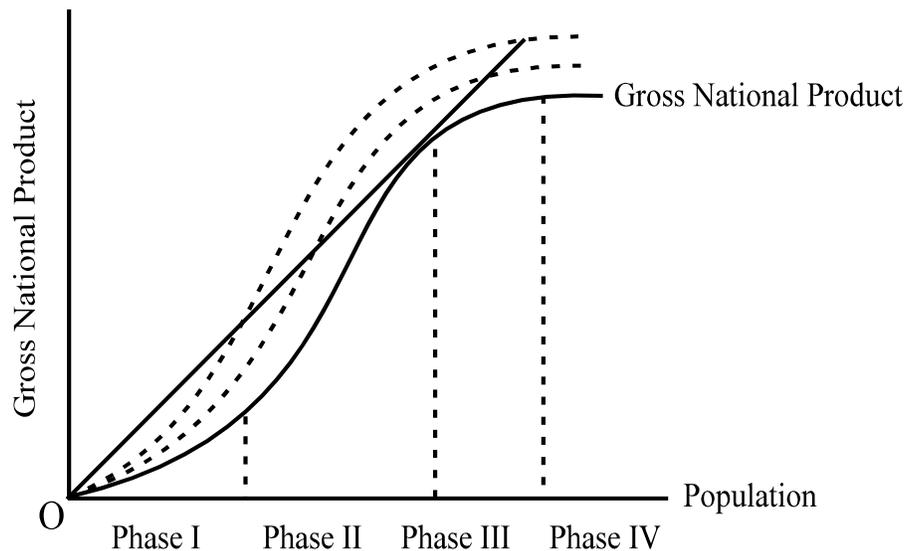


Figure - 1

If additional capital is accumulated the curve will have the same general shape, but will be higher as indicated by dotted curves. Each successive curve

shows the effect of using a larger stock of capital together with the fixed amount of land and varying amounts of labour.

Proposition 2 : Technological Progress Depends on Capital Accumulation

This proposition explains the relationship between technical progress and the level of investment. For classicists, the whole process of technological progress was capital absorbing. They thought that better techniques and new commodities could be introduced by the flow of capital for new investment but the flow of capital was limited. Thus, net saving was needed.

In symbols, the second equation is

$$T = f(I) \quad (2)$$

T = Level of technique

I = Level of investment

The level of technique depends on the level of investment. Thus, capital accumulation and saving were considered as the determinants of technological progress.

Proposition 3 : Investment Depends on Profits

In the classical model, capital accumulation is a function of profit. If the rate of profit is higher, investment is also higher and vice versa. Capitalists make investments because they expect to earn profits on them. Investment means here net investment, that is, a net addition to the stock of capital. So, the third equation is :

$$I = \Delta Q = f(R) \quad (3)$$

I = Net investment

ΔQ = Net addition to capital stock

R = Return on capital investment or profit.

Net investment (I) equals the increase in stock of capital (ΔQ) or profits (R), i.e., return on fixed factors of production (land and capital).

Proposition 4 : Profits Depend on Labour Supply and the Level of Technique

All economic activities hover around profits. The level of profits depend on the level of technique and the size of the labour force. Population growth and employment must move together. Population growth always brought a decline in per capita output, unless offset by technological progress.

Thus, technological progress is vital for economic development.

The circularity is that the level of technique depends on the level of investment. Investment depends on profits and profits depend not only on the level of technique, but on labour force as well.

$$R = f(T, L) \quad (4)$$

$$T = f(I) = f\{I(R)\} = f\{I[R(T, L)]\} \quad (4a)$$

Proposition 5 : The Size of Labour Force Depends on the Size of the Wages Bill or Wage Fund

This proposition of classical school of thought depends upon the "Iron law of wages", which explains how wage theory is related to, and is a function of population theory. Wage mechanism, viz., population growth, ensures the long-run subsistence income of the working force. If wage rate is higher than the subsistence level, workers

would be better off, they will marry and reproduce. Therefore, in the long run, there would be more labour force in the market and competition in the labour market would be keener. Thus, wages would ultimately be brought down to the subsistence level.

We can write the equation for this proposition as

$$L = f(W) \quad (5)$$

L = Size of labour force

W = Wage fund

The size of labour force (L) depends on the size of the wage bill (W).

Proposition 6 : The Wage Bill Depends on the Level of Investment

The classicists considered wage fund as an amount of money available for hiring labour. The wage fund could be built up by saving and putting these into effective use through investment. Thus, wage bill could be increased only by net (savings and) investment, the sixth equation is :

$$W = f(I) \quad (6)$$

Thus, the level of investment determines the size of the wage fund.

Closing the System

An identity is added to close the system, i.e., total output equals profits plus wages :

$$O = R + W \quad (7)$$

Here O refers to the total output and R and W indicate the profits and wages respectively. The output, thus, is the sum of profits and wages together.

An eighth equation which expresses a long-run equilibrium condition is :

$$W = f(L) \quad (8)$$

6.3.3 Summary of the Classical System

$$O = f(L, K, Q, T) \quad (1)$$

$$T = f(I) \quad (2)$$

$$I = \Delta Q = f(R) \quad (3)$$

$$R = f(T, L) \quad (4)$$

$$L = f(W) \quad (5)$$

$$W = f(I) \quad (6)$$

$$O = R + W \quad (7)$$

And in long-run equilibrium, we have

$$W = f(L) \quad (8)$$

Let us now see how the classical system moves through time. If we start with profits as the prime mover of the capitalist system we could write :

$$dR \rightarrow dI \rightarrow dQ \rightarrow dT,$$

$$dW \rightarrow dL \rightarrow dR.$$

An increase in profits brings an increase in investment, and so an addition to the stock of capital, which permits capitalists to take advantage of the steady flow of improved techniques and also raises the wages fund, that brings an accelerated

population growth, raising labour costs and reducing profits.

Thus, capital accumulation would take place only if profits increase and capital decumulation occurs when profits fall. In the classical model, the end result of capitalist development is stagnation. Let us see, how it happens.

1.6.3.4 Stationary State

The historical law of diminishing returns and the Malthusian theory of population are the two main explanations in the classical theory for the ultimate stoppage of all economic progress. In the classical model, the end result of capitalist development is stagnation. In theories of Ricardo and Mill, stagnation resulted from the natural tendency of profits to fall and the consequent choking off of capital accumulation. Thus, the concept of stationary state was a concept of a mature economy. Smith took it as that state in which "there would be a constant scarcity of employment."

The classical theory is explained with the help of Fig. 2. On x-axis time is taken and

on Y-axis rate of capital accumulation $\frac{dk}{dt}$ is taken.

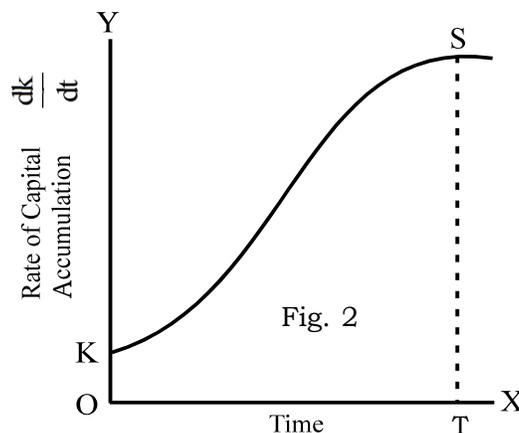


Fig. 2 shows that the economy grows from K to S during time-path T. After T, economy reaches the stationary state linked to S where further growth does not take place because wages have risen so high that profits become zero and capital accumulation stops.

1.6.3.5 A Critical Appraisal

The classical theory of economic development is not free from criticism:

- This theory assumes the existence of a rigid division of society between capitalists and labourers. The role of the middle class which provided the necessary impetus to economic growth was neglected. The classicals didn't recognize the importance of savings done by income-receivers.
- According to classical economists, the pre-requisites for economic development were (i) perfect competition and (ii) institution of private property. They failed to realize the important role which the public sector has assumed in accelerating

capital accumulation in most of the countries.

- The classicists failed to visualise the important impact that science and technology had on the rapid economic development of developed nations.
- The classicists were of the view that wages tended to be at the subsistence level. But we see there has been a continuous increase in money wages without a corresponding decline in profit rates. The use of capital and technological advances in agriculture have off-set the diminishing returns to scale.
- The assumptions of diminishing returns and Malthusian theory of population are proved to be unrealistic. The classical economists under-estimated the role of technological progress and innovation. Rapid increase of farm produce due to technological progress is visible in developed nations. Similarly, the Malthusian theory of population has been disproved by the population trends prevailing in the Western World. The rates of population growth have steadily declined in Europe and North America on account of decline in fertility rates. The classical forecast regarding stagnation has been proved to be false.
- The situation of stationary state is also criticised. Stationary state is not a reality. Ricardo believed that the stationary state would come about in the future when capital accumulation would be stopped. For Mill the stationary state was very near. He welcomed its arrival, for it would lead to improvement in distribution of income. But Mill turned out to be a false prophet because stationary state that he foresaw has not arrived and nor does it show any sign of arrival.

1.6.4 SUMMARY

The classical economists regarded capital formation as the fundamental feature of the process of economic development. It is the race between technological progress and population growth, a race in which technological progress would be in the lead for some time but which would end in stagnation. Important propositions of the classical theory are expressed in the following equations :

- (i) Output is the function of size of labour force, stock of capital, supply of known resources and level of technology.
- (ii) Capital accumulation permits technological progress or level of technology depends on the level of investment.
- (iii) Investment depends on profits.
- (iv) Profits depend on labour supply and level of technique.
- (v) Size of labour force depends on the size of wage bill.
- (vi) The wage bill depends on level of investment. It was built up by saving and effective use of savings through investment.

The model, thus, explains that the economic development of an economy requires an increase in the level of total output. This increase is possible due to the application of improved technology which, in turn, depends on the level of investment. The investment is determined by the level of profits. Profits can be taken as the prime mover of the capitalist system. An increase in profits brings an increase in investment and an addition to capital stock which permits capitalists to take advantage of the steady flow of improved techniques and raises the wage fund, that brings an

accelerated population growth, which causes decreasing returns to labour on land, raising labour costs and reducing profits. Modern economists have criticised classical theory of economic growth on many accounts. They believe that classical economists have under-estimated the possibility of technological change in countering the tendency towards diminishing returns.

1.6.5 QUESTIONS FOR YOUR PRACTICE

1. Critically examine classical theory of economic growth.
2. Explain classical model of economic growth in detail.
3. Summarise classical system in your own words.

Write short answers of the following questions

1. Explain Smithian stationary state.
2. What are Ricardian views on economic growth ?
3. Importance of technological progress in classical model of economic growth.
4. How size of labour force depends on the size of wage's bill ?
5. Criticise classical theory of economic growth.

1.6.6 BOOKS FOR STUDY

1. Benjamin Higgins - *Economic Development : Problems, Principles and Policies.*
2. M.L. Jhingan - *Economics of Development and Planning*
3. Meier & Baldwin - *Economic Development —Theory, History and Policy*

THE MARXIAN MODEL OF GROWTH**1.7.1 INTRODUCTION****1.7.2 MATERIALISTIC INTERPRETATION OF HISTORY****1.7.3 THE MARXIAN MODEL OF GROWTH****1.7.4 CRITICISM****1.7.5 QUESTIONS****1.7.6 REFERENCES****1.7.1 INTRODUCTION**

Karl Marx's views about social change are very comprehensive. The Marxian theory of capitalist development is related with the materialistic interpretation of history, labour theory of value, the division of society into classes, over-production, underconsumption, the falling rate of profit, development of monopoly capitalism, exploitation and contradictions. We are not to discuss whole of Marxian philosophy here. We will concentrate only on those Marxian ideas and thoughts, which are relevant to the process of economic development.

1.7.2 MATERIALISTIC INTERPRETATION OF HISTORY

According to materialistic interpretation, all developments in history of human beings are the result of a continuous struggle between different classes and groups in society and the struggle between nature and human beings.

"The history of all hitherto existing society", as mentioned in Manifesto of the Communist Party, "is the history of class struggle between freeman and slave, lord and serf, guild-master and journeyman, in a word, oppressor and oppressed engrossed in constant opposition to one another, carried on an uninterrupted, now hidden, now open fight that each time ended, either in a revolutionary reconstruction of society at large or in the common ruin of the contending classes." All that is seen through mode of production which is the way to interpret history. The mode of production is constituted by (a) forces of production and (b) relations of production. The more advanced productive forces indicate the increased capacity of human beings to produce and greater capability of human beings against nature. There is continuous change in the productive forces.

The relations of production express the relations among people, arising in the process of production and determined by the level and character of the development of productive forces. Contradictions are the basis of change/progress. The social relations of production come in conflict with the forces of production in the process of development. This conflict is reflected in the form of struggle between different classes leading to a revolution and replacement of the existing social system with a new one. According to Marx, down from the history, there has been a class struggle between "haves and have nots" and this class struggle

is finally eliminated under socialism.

1.7.3 THE MARXIAN MODEL OF GROWTH

Benjamin Higgins has interpreted the process of Marxian capitalist development in a circular flow of equations and unknowns. The propositions are briefly mentioned here.

1. The Production Function

The Marxist idea about the production function is the same as that of the classical economists

$$O = f(L, C, Q, T) \quad (1)$$

Total output (O) is the function of labour force (L), stock of capital (C), the amount of land available (Q) and the level of technique (T). Marx puts more stress on technological progress as the driving force of capitalist growth which is the direct result of stock of capital. Capital accumulation/investment and technology has a strong relationship. Marx not only considered the labour force actually employed but also incorporated the unemployed labour, known as reserve army of labour. To solve the problem of falling rate of profit, Marx also sees interaction between development overseas and development in Europe. In other words, the importance of export of capital and use of cheap labour in less developed countries has great significance to check the fall in rate of profit.

2. Technological Progress and Accumulation of Capital

Marx emphasised the major role of technology and entrepreneurs in the capitalist growth and considered that technological progress depends upon investment, therefore,

$$T = f(I) \quad (2)$$

Technological progress (T) depends on the level of capital accumulation (I).

3. Capital Accumulation Depends on the Rate of Profit

The rate of profit has important place in the Marxian Model. Capital accumulation depends on surplus value/rate of profit. Capital accumulation not only depends on the size of income of capitalists, but also on the rate of return on capital. This can be shown as :

$$I = f(R') \quad (3)$$

R' is the rate of profit.

Surplus value is the difference between money spent to start the production and during the production process (M) and money earned after selling of the production (M') by the capitalist.

$$M' - M = S$$

S is surplus value. This surplus value is appropriated by the capitalist class which according to Marx, ought to have gone to the workers.

4. The Rate of Profit

The rate of profit is the ratio of surplus value to total capital involved in production. In other words, the rate of profit is the rate of return on total capital used in production.

$$R' = \frac{S}{C + V} \quad (4)$$

$C + V$ is the total capital used in production. C is the constant capital and V is the variable capital. Marx considers that the rate of profit determines the capital accumulation.

Marx also analysed the relationship between constant and variable capital. Variable capital represents the wage bill. Technology develops as being labour saving and capital absorbing. As capitalism develops, the ratio of constant capital

to variable capital $\left[\frac{C}{V}\right]$ rises. This is called as organic composition of capital (q).

Marx defined the organic composition of capital as the ratio of what he called constant capital to variable capital.

It can be written as :

$$\frac{C}{V} \quad (5)$$

The implication of this is that the capital costs rise more relative to the labour costs. In this way, the capital-output ratio and capital-labour ratio rises through time. If the exploitation of workers does not increase then the increase in capital per worker must result in a fall in the rate of profit. This can be explained as follows :

$$R' = \frac{S}{C + V} = S' (1 - q) \quad (6)^*$$

S is the rate of surplus value. S' is the ratio of surplus value to variable capital.

$$S' = \frac{S}{V} \quad (7)$$

It means R' and S are positively related. If S' increases then R' will also increase. S' denotes the intensity of exploitation of workers.

$$\text{Rate of exploitation} = \frac{\text{Surplus value}}{\text{Variable capital}}$$

R' and q are inversely related. If the rate of exploitation of workers (S') does not increase and capital-labour ratio (q) increases then the rate of profit falls.

5. Wage Rate Depends on the Level of Capital Accumulation

The level of employment and wage rate affects the wage bill. The level of

*This can be explained mathematically,

$$\begin{aligned} R' &= \frac{S}{C + V} = \frac{SV}{V(C+V)} = \frac{SC + SV - SC}{V(C + V)} = \frac{S(C + V) - SC}{V(C + V)} \\ &= \frac{S(\cancel{C} + \cancel{V})}{V(\cancel{C} + \cancel{V})} = \frac{SC}{V(C + V)} = \frac{S}{V} - \frac{SC}{V(C + V)} = \frac{S}{V} \left[1 - \frac{C}{C + V} \right] \\ &= S' (1 - q) \end{aligned}$$

Organic composition of capital (q) may be expressed as $\frac{C}{C + V}$ or $\frac{C}{V}$

employment and wage rate depends on capital accumulation.

$$W = f(I) \quad (8)$$

6. Employment Depends on the Level of Capital Accumulation

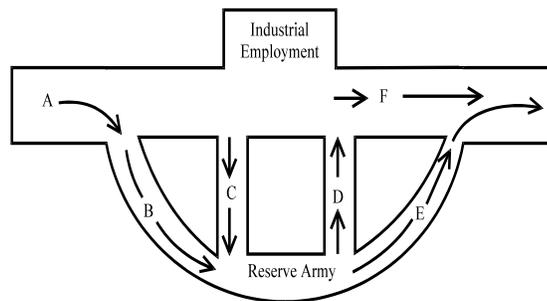
Technological development depends on capital accumulation. According to Marx, technological development over the period of time is a labour saving process. This effects the level of wages and employment. A high rate of capital accumulation would tend to increase employment, but every increase in the stock of capital would tend to swell the 'reserve army' workers displaced by technological advancement. If capital accumulation goes up relative to the existing stock of capital only then employment rises. This can be put as :

$$L = f(1/C) \quad (9)$$

7. Wage Rate and Reserve Army

Due to high rate of capital accumulation, the demand for labour increases which results in the increase of wage rate. This problem is solved by Marx through reserve army of labour.

The existence of unemployed and technologically displaced workers keeps the wage rate equal to the value of labour power. In other words, they do not allow to increase the wage rate above the value of labour power in the long-run. This may be explained through a diagram :



- A = New workers
- B = Unable to find jobs
- C = Displaced
- D = Retired
- E = Retiring
- F = Retiring from productive careers

The reserve army of unemployed labourers works as a check on the increase in the rate of wages.

7. The Variable Capital, Consumption and Capitalist Crisis

Marx analysed the sectoral relationships while explaining the extended reproduction in a capitalist economy. Two sectors are capital goods and consumption goods producing sectors. Capital accumulation can be profitable, if the production can be realised in the market or in other words, if the production can be sold in the market. The increase in consumption is necessary to absorb the increased output of final products. The increase in the consumption of capitalists does not solve the problem because workers provide most of the market for consumer goods.

It may be written as :

$$C_n = f(V) \quad (10)$$

C_n is the level of consumption.

Marx stresses the rate of profit rather than the aggregate amount of profit as the factor determining the level of capital accumulation. The rate of profit falls with the relative increase in C comparison to V , i.e., organic composition of capital. When the ratio C/V rises, the rate of profit falls. This leads the capitalist economy towards crisis. Secondly, with the increase in C/V , the market for consumer goods does not expand but output increases. This also becomes the cause of capitalist crisis.

The contradiction between labour and capital, capitalists themselves and capitalists and other classes causes the crisis in the capitalist economy. Further, the competition between capitalists converts the competitive capitalism into monopoly capitalism through the process of concentration and centralization of capital. The process of concentration and centralization of capital further aggravates the crisis in the capitalist system.

1.7.4 CRITICISM

While the theory of capitalist development has been widely recognised, some of Marx's opponents criticised him and his theory.

1. Marx has been called as a bad prophet. While he was right regarding prediction of spread of communism, the evolution of socialist societies has not been on the lines laid down by Marx.

2. The falling tendency of profits is not correct. According to Joan Robinson, Marx's explanation of the falling tendency of profits explains nothing at all. Marx failed to see that capital is also saved through technological progress. And with a fall in capital-output ratios and increase in productivity, both the profits and wages rise.

3. Some opponents are of the view that Marx does not visualize the flexibility in the capitalist system. The social security measures, anti-trust laws and the mixed economies are the examples of this flexibility

1.7.5 QUESTIONS

(1) Long Questions

1. Critically explain Marxian model of economic growth.
2. If the rate of exploitation of workers does not increase and capital labour ratio increases then the rate of profit falls. How is this explained in Marxian model of growth?

(2) Short Questions

1. What is mode of production ?
2. What are relations of production ?
3. Define rate of profit.
4. Define rate of surplus value.
5. What do you mean by reserve army of labour ?
6. Organic composition of capital.

1.7.6 REFERENCES

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SCHUMPETER'S THEORY OF ECONOMIC DEVELOPMENT**1.8.1 INTRODUCTION****1.8.2 OBJECTIVES****1.8.3 SCHUMPETER'S MODEL OF ECONOMIC GROWTH****1.8.3.1 THE SCHUMPETERIAN THEORY****1.8.3.2 SCHUMPETER'S MODEL****1.8.3.3 A CRITICAL APPRAISAL****1.8.3.4 ITS APPLICABILITY TO UNDERDEVELOPED COUNTRIES****1.8.4 SUMMARY****1.8.5 QUESTIONS****1.8.6 BOOKS FOR STUD****1.8.1 INTRODUCTION**

Joseph Alois Schumpeter first presented his theory of economic growth in his book *Theory of Economic Development* published in German in 1911. His ideas are strongly in contrast with those of classical and neo-classical thinkers. The classicals presented the thesis of secular stagnation, while Marx believed in the inevitable downfall of capitalism. Schumpeter, on the other hand, is more optimistic. According to him, capitalism can lead to even higher level of real income and can guarantee higher level of living. The hero of his story is the entrepreneur. He gives no importance to law of diminishing returns or Malthusian law of population to crush economic progress. There is also no inherent tendency towards a maldistribution of income to produce successively more severe crisis. There is no persistent lack of investment opportunities or social rigidities to prevent the progress of capital. Despite this optimism, he ultimately concludes that the very success of capitalism brings changes in social attitudes and institutions that destroy the system. According to him, capitalism will fail after its too success.

1.8.2 OBJECTIVES

After having gone through this lesson, you would be able to :

- understand the Schumpeterian theory of economic development and its main difference from earlier theories.
- recognize the dynamic role of the entrepreneur in promoting the economic growth of a country.
- discuss the role of innovations and role of credit in bringing economic growth.
- explain the process of capitalist development.
- gauge the applicability of this model to underdeveloped countries.

8.3 THE SCHUMPETER'S MODEL OF ECONOMIC GROWTH**8.3.1 The Schumpeterian Theory :-**

Schumpeter starts his analysis of development process with the concept of

CIRCULAR FLOW. In the circular flow, the same products are produced every year in the same manner. All economic activities are repetitive in a timeless economy. Schumpeter assumes a perfectly competitive economy which is in the state of stationary equilibrium. In such a state there are no profits, no savings, no investments and no involuntary unemployment of resources. This is what Schumpeter calls the 'circular flow'. Every variable moves in a circle. Every thing is certain. Therefore, every situation repeats itself in the same manner year after year. Development, according to him, "is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which for ever alters and displaces the equilibrium state previously existing." The essence of development is a discontinuous change in the circular flow and disturbance of the existing equilibrium gives place to new equilibrium. This disturbance comes in the form of innovations. Thus, Schumpeter's version of economic development is based on a spontaneous, dynamic, discontinuous concept of change and that change comes about in the form of innovations.

(i) The Role of the Entrepreneur

Entrepreneur or innovator is the key figure in Schumpeter's analysis of the process of development. He occupies a central place in the development process because he initiates development in the society and also carries it forward. Entrepreneurship is different from managerial activity. A manager simply directs production under existing techniques, but the entrepreneurship requires the introduction of something new. Entrepreneur is also different from the capitalist. The capitalist simply furnishes the funds, while the entrepreneur directs the use of these funds. It is leadership rather than ownership that matters.

It is 'leaders' or 'captains of industry' who help to speed up the process of development.

(ii) The Role of Innovation

In the Schumpeterian model of economic development, the innovation is the principal force behind all progress. Innovation may take any of the following forms :

- (i) The introduction of a new good.
- (ii) The use of a new method of production.
- (iii) The opening of a new market.
- (iv) The exploration of a new source of raw material.
- (v) The re-organization of an industry.

According to Schumpeter, it is the introduction of a new product and the continual improvements in the existing ones that lead to development.

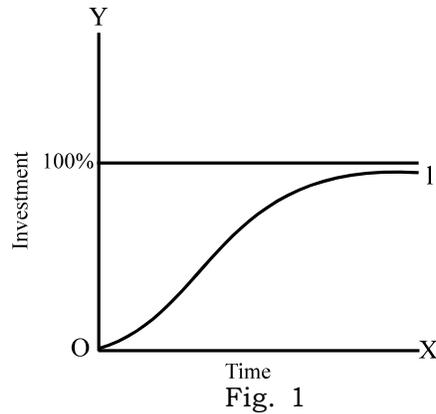
(iii) The Role of Credit

The classical model of economic growth laid special emphasis on savings from current income, but in the Schumpeterian analysis the emphasis is shifted to credit created by the banks. According to Schumpeter, the entrepreneur secures funds for his projects from credit creating banking system. The projects are financed not from current savings, but from bank credits. Entrepreneurs carry out innovations with the help of finance obtained from banks. Since the investment in innovations is risky, they pay interest on it. Once the new innovation becomes successful and profitable, other entrepreneurs follow it in 'swarm like clusters.'

The spread of innovation is never cent per cent. This is shown in Fig. 1. The percentage of firms adopting a particular innovation is shown on the Y-axis and

time is taken on X-axis.

The curve OI shows that firms adopt an innovation slowly to start with, but soon the adoption of innovation gains momentum. But it never reaches 100 per cent adoption by firms.



In Schumpeter's theory of economic development 'forced savings' are an important source of capital accumulation. Increase in investment (financed out of bank credit) leads to greater demand for capital goods which results in the diversion of resources from the production of consumer goods to the production of producer goods and, thus, the economy is forced to save more. But there are definite limits to the amount of accumulation that can occur through inflationary process.

The Process of Capitalist Development

In order to explain the process of development in a capitalist society, Schumpeter starts with a purely competitive economy in a stationary state. Neither net investment nor population growth and full employment prevail. All economic activity repeats itself in a routine manner. The economic system is characterised by a "circular flow which regularly repeats itself and economy is in a state of general equilibrium." The development process involves spontaneous and discontinuous change in the circular flow of economic activity and disturbance of the existing equilibrium which gives place to a state of new equilibrium. This disturbance in the circular flow comes from innovations. See Fig. 2

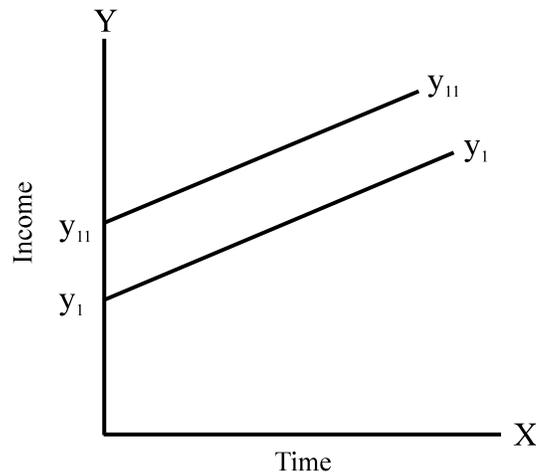


Fig. 2

In a capitalist economy, there are always opportunities for new and better combinations of factors of production. Entrepreneurs or innovators recognize these profit opportunities and get prepared to exploit them. They borrow funds from the bank for undertaking the innovations.

Once the initiative is taken by a few entrepreneurs others follow it in increasing number. As a result of this, the prices and money income start rising and optimistic conditions are created. Factors of production are released from the production of consumer goods which leads to forced savings.

Forced savings induce a second wave of development which is super imposed on the first wave. A lot of speculation also develops because many people think that the rise in prices and incomes will continue. The bank provides credit not only to the innovators, but also to the speculators.

This process of expansion continues for some time, but suddenly the economy starts slipping downwards. The old firms find their markets curtailed due to new products and the coming up of new firms which can sell at a lower price. Thus, these firms are forced into bankruptcy. Furthermore, the success of innovational activity leads to higher income for the entrepreneurs and out of that they start the repayment of bank loans.

The liquidation of weak enterprises gradually exhausts itself and equilibrium is restored.

Cyclical Process

According to Schumpeter, the society progresses through trade cycles. This is why the entrepreneurial activity appears in a swarm like fashion which is responsible for the cyclical nature of economic growth. The clustering of innovations causes a discontinuous disturbance which explains the features of a boom.

The upper turning point arises. The credit financed innovations bid up the prices of the factors of production. The goods resulting from innovations arrive in the market.

There also occurs credit deflation due to the repayment of bank loans by the entrepreneurs. Despite this cyclical nature of the growth process, the secular trend of growth in a capitalist system is characterised by rising level of income and output per head.

Schumpeter accepts that, "The capitalist process, not by coincidence but by virtue of its mechanism, progressively raises the standard of life of the masses." Nonetheless, the economic success of capitalism will eventually lead to its decay. As a result, the process of capitalist development weakens the institutions and values basic to its own survival.

The Decay of Capitalism

Regarding the question "Can capitalism survive ?" "No I do not think it can.", wrote Schumpeter, as his final appraisal of the future of capitalism. The very success of capitalism will bring about its decay. It will not die because of any economic limitations, but the institutional deficiencies will bring about its downfall. The very success of capitalism undermines the social institutions which protects it and this will be responsible for its breakdown giving place to socialism.

Thus, it is not the failure of capitalism, but its very success that would lead eventually to the slaughter of goose that lays the golden eggs.

Schumpeter concludes that capitalism will not collapse in the way Marx predicted. He used the phrase creative destruction. The process of transformation that accompanies radical innovation.

Schumpeter mentions three factors which are mainly responsible for the creeping death of capitalism.

1. The obsolescence of the entrepreneurial function.
2. The disintegration of the bourgeois family.
3. The destruction of the institutional framework of the capitalist society.

Diagrammatic Representation

Schumpeterian process of economic growth can be explained with the help of diagram-3. X-axis measures the time path, whereas Y-axis measures the growth of income (per capita). The innovators break the circular flow at t , their profits continuously increase, reach the maximum and then start falling. In the meanwhile, the imitators follow in "Swarm like cluster". The dotted line tm shows the

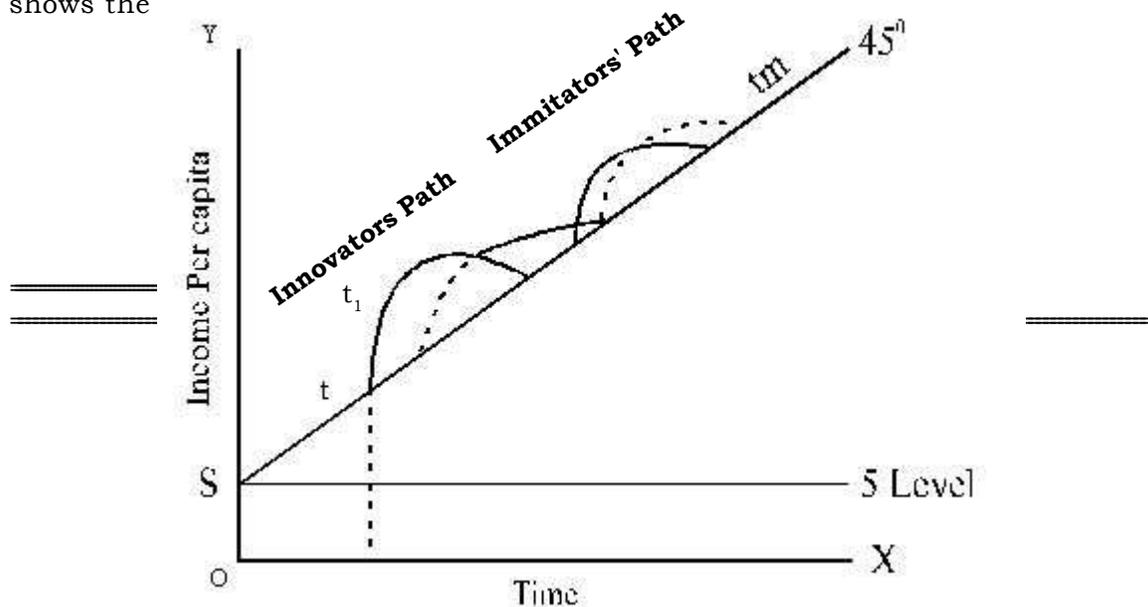


Fig. 3

Thus, the figure reveals that Schumpeter's economic development is discontinuous and disharmonious, i.e., trade cycles are the part and parcel of his theory.

8.3.2 SCHUMPETER'S MODEL

Schumpeter's theory of economic growth can also be expressed in terms of a mathematical model.

Proposition I : The Production Function

Schumpeter had same general concept of the production function as the classical writers and Karl Marx had. Production function, thus, is :

$$O = f(L, K, Q, T) \quad (1)$$

where O is output, L is size of labour force, Q is the stock of capital, K the supply of known resources and T the level of technology.

Proposition II : Savings (S) Depend on Wages (W), Profits (R), and Interest Rate(r).

Schumpeter's concept of saving refers to "saving up" for future consumption or for investment. Savings tend to increase as the income of the workers as well as capitalists rise and savings increase as the interest rate goes up.

$$S = f(W, R, r) \quad (2)$$

where W is the wage rate, R the level of profits and r the rate of interest.

Proposition III : Total investment (I) may be divided into Induced investment (I_i) and Autonomous investment (I_A).

$$I = I_i + I_A \quad (3)$$

where I_i is induced investment and I_A is autonomous investment.

Schumpeter has made the distinction between two kinds of investment. First type of investment is induced investment which is stimulated by the increase in income, output, sales and profits etc. Second type of investment is autonomous investment which is influenced by the long-run considerations as technological change, scientific discoveries, etc.

Proposition IV : Induced Investment depends on the Level of Profits and Interest Rate.

Induced investment rises as the profits increase and falls as interest rate goes up. The gap between profits and interest rate is of primary importance in determining induced investment. Larger the gap, the greater will be capital accumulation (Q) to induce more investment.

$$I_i = f(R, r, Q) \quad (4)$$

where, Q is stock of capital.

Proposition V : Autonomous Investment depends upon Resource discovery and Technological Progress. Schumpeter laid particular stress on the innovations. Innovations in the form of resource discovery and technological progress determine the autonomous investment.

$$I_A = f(K, T) \quad (5)$$

where K is rate of resource discovery, T is rate of technological progress.

Propositions VI and VII : Technological Progress and Rate of Resource Discovery depend on the Supply of Entrepreneurs.

$$\text{Where } T = f(E) \quad (6)$$

$$K = f(E) \quad (7)$$

Proposition VIII : Supply of entrepreneurs (E) depends on the Rate of Profit (R) and Social Climate (X).

$$E = f(R, X) \quad (8)$$

Where R is rate of profit and X is social climate.

Proposition IX : Gross National Product (O) depends on the relationship between Savings (S) and Investment (I) and Super-multiplier.

$$O = K(I - S) \quad (9)$$

Proposition X : The Wage Bill depends upon the Level of Investment.

$$W = f(I) \quad (10)$$

W is wage bill and I is the level of investment.

Proposition XI : The Social Climate (X) is reflected by Distribution of Income

E, I, W

$$X = f\left(\frac{E, I, W}{M, P}\right) \quad (11)$$

Proposition XII : Gross National Product equals Profits plus Wages.

$$O = R + W \quad (12)$$

1.8.3.3 A CRITICAL APPRAISAL

Schumpeter's analysis must be ranked as a major performance. As he correctly emphasised the role of entrepreneur in the development of capitalism. In the capitalistic societies, entrepreneurs were the prime movers of the development process and innovations played an important role in the development of capitalism. However, his theory of economic development is criticised on the following grounds :

- Besides innovation, there are many other factors which bring about economic growth and Schumpeter has ignored them and placed great faith on 'Cyclical Fluctuations' only. Cyclical changes are not only due to innovations.
- Schumpeter lays greater emphasis on bank credit theory. Bank credit may be important in the short-run when industrial concerns get credit facilities from banks. But in the long-run when the need for capital funds is much greater, bank credit is insufficient.
- Under such circumstances the business houses are forced to float fresh shares and debentures in the capital market.
- His conclusions about the inevitable emergence of socialism are also not very sound. His analysis does not explain how a capitalist society is transformed into socialism.

We can conclude the discussion better in the words of Meier and Baldwin. To quote, "Schumpeter's broad socio-economic analysis of a capitalist process is generally admired. Yet, few seem prepared to accept its conclusions. His arguments are stimulating but not completely convincing."

1.8.3.4 ITS APPLICABILITY TO UNDERDEVELOPED COUNTRIES

Schumpeter's analysis has only limited application to underdeveloped countries for the following reasons :

—The socio-economic conditions in underdeveloped countries are altogether different from those that exist in Western countries, particularly Western Europe and America. The pre-requisites for development in the form of economic and social overheads are non-existent.

—Dynamic entrepreneurship lacks in underdeveloped countries. Lack of adequate power, transport, skilled personnel, etc. act as disincentives to entrepreneurial activity.

—Schumpeter's innovator is a private entrepreneur who does not fit into the today's mixed economies. In an underdeveloped economy, government is the bigger entrepreneur. The main investment for development comes from the public and semi-public sectors. Hence the innovator has only a limited role to play in an underdeveloped economy.

—The development process in the third world countries is based not on innovations, but on the assimilation of existing innovations. Entrepreneurs in underdeveloped countries are not innovative type, but they adopt/immitate innovations taking place in advanced countries.

—Schumpeter's theory neglects the effect of growth of population on wealth. In these countries, rapidly growing population is the main hurdle in the process of development and any theory that neglects the population problem cannot be very useful to underdeveloped countries.

1.8.4 SUMMARY

J.A. Schumpeter presented his theory of economic growth in the book "*Theory of Economic Development*". Schumpeter assumes a perfectly competitive economy which is in stationary equilibrium. In such an economy, all economic activities are repetitive in a timeless economy. This is called circular flow.

Schumpeter begins his model of economic growth with the breaking up of the circular flow with an innovation in the form of a new product. The innovating 'Entrepreneurs' play an important role. They are financed by the bank credit. Once the new innovation becomes successful and profitable, the other entrepreneurs follow it in swarm like fashion.

Secularly continued technological progress will result in an unbounded increase in total and per capita output. Despite this optimism, he ultimately concludes that the very success of capitalism breeds changes in social attitudes and institutions that destroy the system. According to him, capitalism will fail because of its too successfulness.

In terms of a mathematical mode, Schumpeter's model has been expressed like that.

$$O = f(L, K, Q, T) \quad (1)$$

$$S = f(W, R, r) \quad (2)$$

$$I = f(I_i + I_A) \quad (3)$$

$$I_i = f(R, r, Q) \quad (4)$$

$$I_A = f(K, T) \quad (5)$$

$$T = f(E) \quad (6)$$

$$K = f(E) \quad (7)$$

$$E = f(R, X) \quad (8)$$

$$O = K(I - S) \quad (9)$$

$$W = f(I) \quad (10)$$

$$X = f\left(\frac{R}{W}\right) \quad (11)$$

$$O = R + W \quad (12)$$

The main points of criticism of the model are that Schumpeter over-emphasised the importance of innovations and role of credit.

Schumpeter's model is unsuitable to underdeveloped countries because they have got a socio-economic structure which is entirely different from socio-economic order that prevailed in Western Europe and America in 18th and 19th century and which has been the basis of Schumpeterian model of development.

1.8.5 QUESTIONS FOR YOUR PRACTICE

(1) Long Questions

1. Critically examine the Schumpeterian model of economic growth.
2. What is the relevance of Schumpeterian model of economic growth to underdeveloped countries ?
3. Explain the role of entrepreneur in bringing economic growth in purely competitive economy.

(2) Short Questions

- (i) What is stationary state ?
- (ii) Circular flow.
- (iii) Role of innovations.
- (iv) The role of credit.
- (v) Cyclical nature of the growth process.
- (vi) 'Capitalism is self-destructive.' Schumpeter.
- (vii) Applicability of Schumpeterian model of growth to underdeveloped countries.

1.8.6 BOOKS FOR STUDY

1. Joseph A. Schumpeter : *Theory of Economic Development*, 1934.
2. M.L. Jhingan : *The Economics of Development*.
3. Benjamin Higgins : *Economic Development : Principles, Problems and Policies*.
4. M.S. Khan : *Schumpeter's Theory of Economic Development*.
5. M.L. Jhingan : *The Economics of Development and Planning*.

HARROD-DOMAR MODEL OF GROWTH**1.9.1 INTRODUCTION****1.9.2 OBJECTIVES****1.9.3 HARROD-DOMAR MODEL****1.9.3.1 Requirements of Steady Growth****1.9.3.2. Assumptions****1.9.3.3 A) The Domar Model****B) The Harrod Model****1.9.3.4 HARROD DOMAR MODELS—COMPARISON****i. Similarities****ii. Differences****1.9.3.5 LIMITATIONS OF THE MODEL****1.9.3.6 APPLICABILITY OF HARROD DOMAR MODEL TO
UNDERDEVELOPED COUNTRIES****1.9.4 SUMMARY****1.9.5 QUESTIONS****1.9.6 SUGGESTED READINGS****1.9.1 INTRODUCTION**

R.F. Harrod and Evsey Domar have made a distinct contribution in evolving dynamic models to suit the changing conditions of an economy. Both these models are very similar and try to answer the questions posed by the post-Keynesians. Keynes did not concentrate on the long-run problems of the economy. Post-Keynesians have tried to fill up this gap by extending the Keynesian theory into a more comprehensive long period theory of output and employment. In this field, Prof R.F. Harrod and E.D. Domar have made a most notable contribution. Their models of economic growth provide a key to the understanding of the process and problems of economic development in advanced countries. In their analysis the major problem is of finding out the requirements of maintaining a steady growth of full employment without deflation or inflation. The model implies that the promotion of investment by government planning and command is needed to accelerate economic growth in low income countries.

1.9.2 OBJECTIVES

After having gone through this lesson you would be able to :

- understand the process and problems of economic development in advanced countries as explained by Harrod and Domar.
- discuss three sets of issues raised by Harrod to attain the stable growth rate.

- explain the situation of divergence—among G , G_w and G_n or from golden path.
- understand the situation of long-run disequilibrium.
- compare Harrod and Domar models of economic growth.
- judge the applicability of Harrod-Domar analysis to underdeveloped economies.

1.9.3 HARROD-DOMAR MODEL

Both Harrod and Domar are concerned with determining the conditions required for an uninterrupted growth in national income. They are interested in discovering the rate of income growth necessary for smooth functioning of the economy. These models stress on the conditions which are very essential for achieving and maintaining steady growth.

1.9.3.1 Requirements of Steady Growth

Like classical economists, Harrod and Domar have assigned a crucial role to capital accumulation and investment in the process of growth. Investment plays a double role. On the one hand, investment generates income (through the operation of multiplier) and on the other hand, it increases the productive capacity by enlarging the capital stock. In other words, investment affects the level of income as well as production. The effect of investment on income is known as 'multiplier effect' and that on production is known as 'productivity effect' or 'Sigma effect'. Multiplier effect is the Keynesian tool and productivity effect is the classical tool. Harrod-Domar analysis takes into consideration both the tools. The simultaneous operation of these two effects is an essential condition for dynamic equilibrium.

1.9.3.2 Assumptions

The models are highly aggregative. The models apply to the economy as a whole and make no distinction between consumer goods and capital goods and between the various sectors in the economy.

The main assumptions of the model are as follows :

- An initial full employment level of income has already been achieved.
- There is no government interference.
- There is no foreign trade. The model is based on the principle of closed economy.
- There are no lags in adjustment, i.e., the economic variables such as saving, investment, income and expenditure adjust themselves in the same period of time. To make it clear, it can be stated that any change in savings brings about the corresponding changes in the level of investment in the same period of time.
- The average propensity to save (APS) and the marginal propensity to save

(MPS) are equal to each other. In other words, $APS = MPS$ or $\frac{S}{Y} = \frac{\Delta S}{\Delta Y}$; i.e., the absolute change in saving is equal to relative change in saving.

- The capital co-efficient, i.e., the ratio of capital stock to income is assumed

to be fixed.

- There is no depreciation of capital goods.
- Saving and investment are related to the income of the same year.

There is accounting equality as well as functional equality between saving and investment. The equality can be expressed as

$$S_o = I_o \text{ (accounting equality)}$$

$$S_e = I_e \text{ (functional equality)}$$

S_o and I_o are observed savings and observed investments respectively.

S_e and I_e are expected savings and expected investments respectively.

- There is only one type of product.
- The general price level is constant, i.e., the money income and the real income are the same.
- There are no changes in interest rate.
- Fixed and circulating capitals are lumped together under capital.

Now we are going to discuss Harrod's model and Domar's Model separately.

1.9.3.3 (A) Harrod's Model

Prof. R.F. Harrod has raised three questions :

- (i) How can steady growth rate be achieved with a fixed capital-output ratio (capital co-efficient) and fixed saving-income ratio (propensity to save) ?
- (ii) What are the conditions for maintaining the stable growth ?
- (iii) How do natural factors put a ceiling on the growth rate of the economy ?

In order to discuss these three sets of issues, Harrod has explained three growth rates. The growth rates are : (i) Actual growth rate (ii) Warranted growth rate and (iii) Natural growth rate. Now we discuss these growth rates separately.

(i) Actual Growth Rate (G)—It results from a change in aggregate output. This is determined by the saving ratio and the capital-output ratio which remain fixed in a given period. In other words, it can be defined as the ratio of change in income (ΔY) to the total income (Y) in the given period.

If actual growth rate is denoted by G , then $G = \frac{\Delta Y}{Y}$

The relationship between the actual growth rate and its determinants can be expressed in the form of an equation given below :

$$GC = S \tag{1}$$

Where G is actual rate of growth, C represents the capital-output ratio

or $\frac{\Delta K}{\Delta Y}$

S refers to the saving-income ratio $\left[\frac{S}{Y} \right]$

This equation is simply a truism because it explains that saving and investment are equal to each other.

$$\left(\text{Since } G = \frac{\Delta Y}{Y}, C = \frac{\Delta K}{\Delta Y} = \frac{I}{\Delta Y} = [\because \Delta K = I], S = \frac{S}{Y}\right)$$

Substituting the values of G, C and S in equation (1) we get,

$$\frac{\Delta Y}{Y} \times \frac{I}{\Delta Y} = \frac{S}{Y}$$

$$\frac{I}{Y} = \frac{S}{Y} \text{ or } I = S$$

Thus, equation (1) explains that the condition for achieving the steady growth rate or dynamic equilibrium is that ex-post saving must be equal to ex-post investment.

(ii) Warranted Growth Rate (Gw)—This is called 'full capacity rate of growth' of income, 'full-employment growth rate' or 'potential growth rate'. This growth rate is primarily related to the behaviour of businessmen. At the warranted rate of growth, demand is high enough for businessmen to sell what they have produced and they will continue to produce at the same percentage rate of growth. Thus, it is the path on which the supply and demand for goods and services will remain in equilibrium, given the propensity to save. This is the rate of output at which businessmen feel they have the right level of capital and do not wish to expand or decrease investment.

The equation for warranted growth rate is

$$Gw Cr = S \quad (2)$$

Where Gw refers to warranted growth rate.

Cr denotes the amount of capital required to maintain the warranted growth rate or the growth rate of output. S is saving-income ratio.

How to Achieve Stable Growth ?

According to Harrod, the economy can achieve stable growth if $G = Gw$ and $C = Cr$.

- Actual growth must be equal to the warranted growth rate. In other words, growth rate of income must be equal to the growth rate of output.
- Secondly, actual investment must be equal to the expected investment, if an economy is to achieve the objectives of stable growth.

Long-run Disequilibrium

If G and Gw are not equal, the economy will be in disequilibrium.

For instance :

- (i) When $G > Gw$ then $C < Cr$
- (ii) When $G < Gw$ then $C > Cr$

In first situation, when $G > Gw$ then C will be less than Cr. When $G > Gw$, there will be insufficient goods or insufficient equipment. The demand for output (because of higher level of income) will exceed the supply of output (because of lower level of output) and the economy will experience a chronic inflation. It can

be explained in another way too when $C < C_r$. Under this situation, the actual amount of capital falls short of the required amount of capital. This will lead to deficiency of capital, which in turn, would adversely affect the volume of goods to be produced. Fall in the level of output will result in the scarcity of goods and hence it will lead to inflation and growth of economy under the situation of inflation can never be stable.

On the other hand, if G is less than G_w , then C is greater than C_r . Such a situation leads to secular depression because actual income grows more slowly than what is required by the productive capacity of the economy leading to an excess of capital goods ($C > C_r$). In this situation, desired investment is less than realised investment and that aggregate demand falls short of aggregate supply. The result is fall in output, employment and income. There would, thus, be chronic depression.

On the basis of the above discussion, it can be concluded that stable growth or steady growth can occur only when $G = G_w$. Harrod states that once G departs from G_w , it will depart farther and farther away from equilibrium. The economy will be in a state of instability when G and G_w are not equal to each other. The equilibrium between G and G_w is called steady state equilibrium or Knife-edge equilibrium.

It follows that one of the major tasks of public policy is to bring G and G_w together in order to maintain long-run stability. For this purpose, Harrod introduces his third concept of the natural rate of growth.

(iii) The Natural Rate of Growth (G_n) : This is corresponding to growth in labour force. This is also called the full employment rate of growth. "It is the rate of growth which allows the increase of population and technological improvements." It is the highest attainable growth rate which would bring about the fullest possible employment of the resources existing in the economy. It depends on macro variables like population, technology, natural resources and capital equipment.

The equation for natural rate of growth is

$$G_n = C_r = S \quad (3)$$

This equation shows that G_n may or may not be equal to G_w .

Divergence of G , G_w and G_n

For attaining full employment equilibrium, it is necessary that $G_n = G_w = G$. But this is a knife-edge balance. Divergence among G , G_w and G_n is a possibility and this will generate secular stagnation or inflation in the economy.

—If $G > G_w$, investment increases faster than saving and income rises faster than G_w .

—If $G < G_w$, saving increases faster than investment and rise of income is less than G_w .

According to Harrod if $G_w > G_n$, conditions of secular stagnation will develop. In such a situation, G_w is also greater than G because the upper limit to the actual rate is set by the natural rate as shown in fig. 1

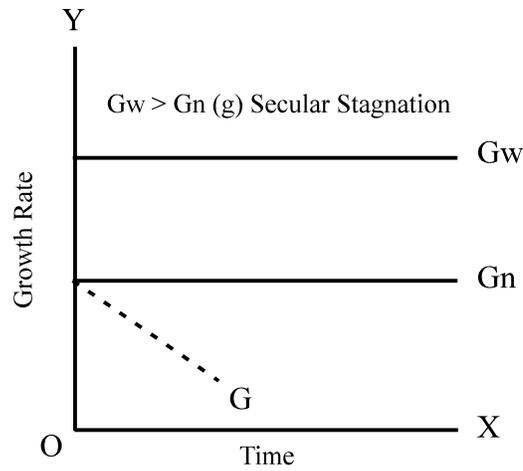


Fig. 1

On the other hand, if $G_w < G_n$, G_w will also be less than G and a tendency of secular inflation will develop in the economy. Under this condition, there will be a shortage of capital goods while labour will be plentiful. Profits are high since desired investment is greater than realised investment. Businessmen will have a tendency to increase their capital stock. This will create conditions of secular inflation. This situation is shown in Fig. 2

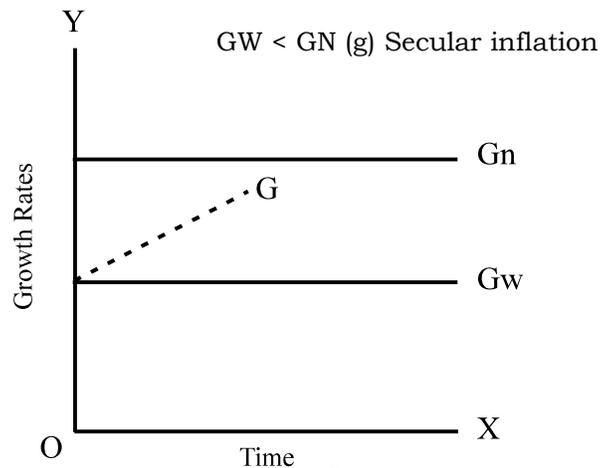


Fig. 2

This instability in Harrod's model is due to the rigidity of its basic assumptions. These are a fixed production function, a fixed saving ratio and a fixed growth rate of labour force. Economists have attempted to relieve this rigidity by permitting capital and labour substitution in the production function, by making the saving ratio a function of the profit rate and the growth rate of labour force as a variable in the growth process.

B. The Domar Model

Domar constructs his model around the question : Since investment increases productive capacity and also creates income, what should be the rate of increase in investment in order to make the increase in income equal to that of productive capacity so that full employment is maintained. He answers this question by linking aggregate demand and supply to investment.

The productive capacity is represented by the supply side and the income generating capacity is represented by the demand side.

Supply Side : The supply side of capital depends on investment (I). If $I =$ investment and $\sigma =$ annual productivity of investment, then supply side is represented by

$I\sigma =$ increase in total productive capacity of the economy due to investment.

Demand Side : Demand for output comes from income which depends on investment. Thus, demand side of the model which represents increase in income is also dependent on investment (I). Investment generates income via multiplier, which in turn, depends on the propensity to consume and to save.

The propensity to save is represented by α (alpha) and its reciprocal $1/\alpha$ is the multiplier.

Now the increase in income will be multiplier ($1/\alpha$) times the increase in investment (I).

$$\Delta Y = 1/\alpha (\Delta I)$$

If full employment equilibrium is the starting point and if that equilibrium is to be maintained as income increases, the demand for output must be made equal to the supply of output. Or, in other words, increase in productivity must be made equal to increase in income.

$$\text{Thus, the stable growth condition is } 1/\alpha \Delta I = I\sigma$$

The left part of the equation shows the demand side of the equation, i.e., annual increase in income while the right side shows the supply side, i.e., the increase in productive capacity.

By solving the equation, we get,

$$\frac{\Delta I}{I} = \alpha\sigma \quad (\text{multiplying both the sides by } \alpha \text{ and dividing both the sides by 'I'})$$

This equation shows that the net autonomous investment $\frac{\Delta I}{I}$ should

grow at constant annual relative rate which is equal to the product of the propensity to save and the productivity of investment, if a steady rate of growth of the economy at full employment is to be maintained.

Domar gives a numerical example to explain his point. Let $\sigma = 25$ per cent per year, $\alpha = 12$ per cent and $Y = 150$ billion dollars per year. If full employment is

to be maintained, an amount equal to $150 \times \frac{12}{100} = 18$ billion dollars should be

invested. This will raise productive capacity by the amount invested σ times, i.e., by $150 \times \frac{12}{100} \times \frac{25}{100} = 4.5$ billion dollars and the national income will have to

rise by the same amount. But the relative rise in income will equal the absolute increase divided by the income itself, i.e.,

$$150 \times \frac{12 \times \frac{25}{100}}{150} = \frac{12}{100} \times \frac{25}{100} = \alpha\sigma = 3\%$$

This shows that the income must grow at a rate of 3 per cent per annum, if full employment is to be maintained. Any divergence from this 'golden path' will lead to cyclical fluctuations. When $\Delta I/I$ is greater than $\alpha\sigma$ the economy would experience boom and when $\Delta I/I$ is less than $\alpha\sigma$ it would suffer from depression.

Main Points of Harrod-Domar Analysis

(i) Investment is the centre of the problem of steady and stable growth because investment plays a double role. On the one hand, it generates income and on the other it increases the productive capacity of the economy.

(ii) The increased capacity can result in greater output or greater unemployment depending on behaviour of income.

(iii) Conditions can be stated for the behaviour of income that will allow full employment (of labour or of capital stock) to be maintained overtime.

(iv) These conditions, however, designate only a steady line of growth for the economy. The actual growth rate may differ from the warranted rate of growth.

(v) The business cycles are viewed as the deviation from the path of steady growth. These deviations are limited in the upward trend by the 'full employment ceiling' and in the downward direction by the floor of autonomous investment and consumption.

1.9.3.4 HARROD-DOMAR MODELS—COMPARISON

1. Similarities

(i) Both Harrod and Domar were interested to study the requirements of steady growth in an economy.

(ii) Both Harrod and Domar have used the dynamic approach in constructing the models. Both were interested in discovering that rate of growth which will keep a dynamic economy in the path of equilibrium from year to year.

(iii) Given the capital-output ratio, as long as the average propensity to save is equal to the marginal propensity to save, the equality of saving and investment fulfils the conditions of equilibrium rate of growth.

It can be shown from Domar's model that $\Delta I = \Delta S$ and Harrod also shows that $I = S$.

The Harrod Model

$$\begin{aligned}
 GC = S & \left[\begin{array}{l} G = \frac{\Delta Y}{Y} \\ C = \frac{I}{\Delta Y} \\ S = \frac{S}{Y} \end{array} \right. \\
 & = \frac{\Delta Y}{Y} \times \frac{I}{\Delta Y} = \frac{S}{Y} \\
 & \frac{\Delta Y}{Y} \times \frac{Y}{S} = \frac{\Delta Y}{I} \\
 & \frac{\Delta Y}{S} = \frac{\Delta Y}{I} \\
 & \text{or } \Delta Y \times I = \Delta Y \times S \\
 & I = S
 \end{aligned}$$

The Domar Model

$$\begin{aligned}
 & = \Delta I \times \frac{1}{\alpha} = I \sigma \left[\begin{array}{l} \sigma = \frac{\Delta Y}{I} \\ \alpha = \frac{\Delta S}{\Delta Y} \end{array} \right. \\
 & = \Delta I \times \frac{1}{\frac{\Delta S}{\Delta Y}} = I \times \frac{\Delta Y}{I} \\
 & \frac{\Delta I \times \Delta Y}{\Delta S} = I \times \frac{\Delta Y}{I} \\
 & \text{or } \frac{\Delta I \times \Delta Y}{\Delta S} = \Delta Y \\
 & \text{or } \Delta I \times \Delta Y = \Delta Y \times \Delta S \\
 & \text{or } \Delta I = \Delta S
 \end{aligned}$$

(iv) Harrod's S is Domar's α and Harrod's warranted rate of growth (G_w) is Domar's full employment rate of growth ($\alpha\sigma$)

$$\text{Harrod's } \left(G_w = \frac{S}{Cr} \right) = \text{Domar's } \alpha\sigma$$

To prove it

$$= \alpha = \frac{S}{Y} \text{ or } S = \alpha Y \quad (1)$$

$$= \sigma = \frac{\Delta Y}{I} \text{ or } \Delta Y = I\sigma \quad (2)$$

Since $S = I$, and substituting S for I in equation (2)

We have

$$\begin{aligned}
 \Delta Y & = \alpha Y \sigma \quad [S = \alpha Y] \\
 \frac{\Delta Y}{Y} & = \alpha \sigma \quad (3)
 \end{aligned}$$

$$G_w = \alpha\sigma \quad \left(\text{Since } G_w = \frac{\Delta Y}{Y} \right)$$

(v) Both these models stress that knife-edge equilibrium path for an

economy is highly unstable. It is due to the inherent characteristics of a capitalist economy. After having discussed the points of similarity between the two models now we come to the differences in the two models.

2. Differences

(i) Harrod uses the marginal capital-output ratio and the accelerator. But Domar uses the reciprocal of marginal capital-output ratio and the multiplier.

(ii) Harrod regards the level of income as the most important factor in the growth process. But Domar assigns a key role to investment in the process of growth and emphasises on its dual character.

(iii) Whereas, Harrod equates demand and supply of savings. Domar, on the other hand, forges a link between demand and supply of investment.

(iv) For Harrod the business cycle is an integral part of the path of growth but for Domar it is not so.

However, Domar considers business cycle in his model by allowing the average productivity of investment to change.

(v) Harrod uses three distinct rates of growth : the actual rate (G), the warranted rate (Gw) and the natural rate (Gn). But the Domar model is based on one growth rate $r = \alpha\sigma$.

(vi) Harrod places important role to autonomous investment in his model, but Domar does not.

1.9.3.5 LIMITATIONS OF THE MODEL

Harrod-Domar model of growth has generally been criticised on the following grounds :

(1) The capital-output ratio and the propensity to save are assumed to be constant. In reality, both of them are likely to change over a long period and, thus, can also change the requirements for steady growth.

(2) The presumption of fixed proportion between labour and capital is also untenable. In reality, different factors of production can be substituted for each other to some extent.

(3) The models do not consider the possibility of price changes facilitating steady growth. Price changes do occur and they can exercise an important influence on the growth process.

(4) The assumption of constancy of interest rates is also irrelevant to the analysis. Interest rates change and affect investment. Reduction in interest rates during period of over-production can make capital-intensive processes more profitable by increasing the demand for capital and thereby reduce excess supplies of goods.

(5) The Harrod-Domar models ignore the effect of government programmes on economic growth in case the government takes up the responsibility of development programmes.

(6) The concept of warranted rate of growth is not realistic because it is determined by neglecting the entrepreneurial behaviour.

1.9.3.6 APPLICABILITY OF HARROD-DOMAR MODELS TO UNDERDEVELOPED COUNTRIES

Harrod-Domar models of economic growth were built up on the experience of

industrially developed countries. They were meant to discover the process by which an advanced country might be prevented from the effects of secular stagnation. The application of these models has now been extended to the development problems of underdeveloped economies.

Hirschman states that the Domar model, in particular, has proved to be remarkably versatile, it permits us to show not only the rate at which the economy must grow if it is to make full use of the capacity created by new investment but inversely, the required savings and the capital-output ratios, if income is to attain a certain target growth rate.

In 1960, Harrod modified his model to some extent to make it more relevant to underdeveloped countries. He has taken into account the role played by the rate of interest in determining the supply of and demand for savings. Thus, the supply side of his fundamental equation has become more comprehensive. There are low savings, high investment and chronic inflation in underdeveloped countries. Harrod suggests that investment should be financed out of only expanding bank credit.

Harrod also emphasises the necessity of changing the social and institutional factors in underdeveloped countries. He has implicitly assigned a very important role to the government of underdeveloped countries to make $G = G_w$ in order to avoid the secular inflationary spiral.

Limits to Applicability

- The problem of underdeveloped countries is not stability in growth, but growth itself.
- These growth models are characterised by a high saving ratio and a high capital-output ratio. Since income is low in underdeveloped countries, saving is also low. Similarly, the concept of capital-output ratio can hardly be applied satisfactorily.
- Harrod's warranted rate of growth guarantees full utilisation of capital and not necessarily full employment of labour and hence it is incapable of solving the problem of unemployment in underdeveloped countries.

Despite these shortcomings, the models have some positive suggestions for underdeveloped countries. The models are important because they are capable of being modified so as to take into account the fiscal policy parameters as crucial variables in the process of economic development of an underdeveloped country.

1.9.4 SUMMARY

Harrod and Domar tried to study the requirements of steady growth in an economy. Both were interested in discovering the rate of growth which will keep a dynamic economy in the path of equilibrium from year to year.

Harrod explained three types of rates of growth :

- (i) the actual rate of growth
- (ii) the warranted rate of growth and
- (iii) the natural rate of growth.

According to Domar, for maintaining stable growth, the increased income must be matched with the increased productivity. He linked aggregate demand and supply

through investment.

The points of similarity between two models are that Harrod's warranted rate of growth is the same as Domar's stable rate of growth. In Domar's model $\Delta I = \Delta S$ and in Harrod's $I = S$. Harrod's S is Domar's α and Harrod's C_r is the reciprocal of Domar's σ .

Important differences in the two models are—Harrod uses the marginal capital-output ratio and the accelerator. Domar uses the reciprocal of marginal capital-output ratio and the multiplier.

The assumptions of constancy of the capital-output ratio and the propensity to save are criticised. The presumption of fixed proportion between labour and capital is also criticised. Prices do not remain constant, interest rate changes and government programmes are important for economic growth.

In the end, it is concluded that Harrod-Domar models of economic growth, though mainly applicable to developed economies, can also be applied to underdeveloped countries after slight modifications.

1.9.5 QUESTIONS

(1) Long Questions

1. Explain Harrod-Domar model in detail.
2. Compare Harrod and Domar models.
3. How Harrod and Domar have tried to study the requirements of steady growth in an economy ?
4. What are the assumptions and limitations of Harrod-Domar model?
5. Whether Harrod and Domar models can be applied to under developed countries or not ?

(2) Short Questions : Write short answers to the following questions :

- (i) What is actual rate of growth ?
- (ii) Warranted rate of growth.
- (iii) Natural rate of growth.
- (iv) $\frac{\Delta I}{I} = \alpha\sigma$
- (v) Divergence among G , G_w and G_n .
- (vi) What are limitations of Harrod-Domar Model ?
- (vii) How $G > G_w$ would lead to chronic inflation?
- (viii) The situation of $G < G_w$ would lead to chronic depression. How ?
- (ix) What is steady state equilibrium ?

1.9.6 SUGGESTED BOOKS

1. R.F. Harrod : *Towards a Dynamic Economics*, 1949.
2. E. Domar : *Essays in the Theory of Economic Growth*, 1957.
3. M.L. Jhingan : *The Economics of Development and Planning*.
4. V.B. Singh : *The Theories of Economic Development*.

NEO-CLASSICAL GROWTH MODEL

- 1.10.1 J.E. Meade's Model
- 1.10.2 Joan Robinson's Model
- 1.10.3 Questions for Practice
- 1.10.4 Suggested Readings

This lesson is divided into two sections : Section I deals with J.E. Meade's Model and Section II explains Joan Robinson's Model in brief.

1.10.1 J.E. MEADE'S MODEL

The basic assumptions of Meade's model are :

1. The economy is a closed one without any economic or financial relationships with other economies.
2. There is laissez-faire closed economy.
3. Economic activity is carried out in conditions of perfect competition.
4. There are constant returns to scale.
5. Only two types of commodities—consumption goods and capital goods are produced in the economy.
6. There is full employment of land, labour and machinery.
7. All machines are alike and the ratio of labour to machinery can be easily varied. This is the assumption of perfect malleability of machinery.
8. There is perfect substitutability in production between capital goods and consumption goods.
9. Of any given stock of machines, no matter how old or how new they are, a certain percentage collapses or disappears every year. This is the assumption of depreciation by evaporation.

Determinants of the Rate of Economic Growth

On the basis of the above assumptions, the net output produced by the economy depends upon three things, viz.,

- The amount of the existing stock of machines.
- The amount of land or natural resources available for productive use in the economy.
- The state of technical knowledge which is assumed to improve through time.

This relationship can be expressed in the form of the following production function :

$$Y = F(K, L, N, T) \quad (1)$$

Where,

Y = net output or net real national income.

K = the existing stock of machines.

L = the amount of labour.

N = the amount of land.

T = time, since with the passage of time, technical progress takes place allowing net output (Y) to increase even without any increase in existing stock of machines, labour and land (K, L or N).

An increase in Y (ΔY) through time can take place in the following three ways :

First, the stock of machines (K) may increase because the community is saving a part of its income and is thereby accumulating real capital. If increase in the stock of capital taking place in one year is given by ΔK , the output will increase by $V\Delta K$, where V denotes the marginal net physical product of a machine or marginal product of capital.

Second, the working population (L) may grow. If ΔL denotes increase in the amount of labour productively employed in one year and W measures the marginal product of labour, the output will increase in that year by $W\Delta L$.

Finally, net output can increase if technical progress takes place (enabling more to be produced by the same amount of factors). If increase in net output in one year due to technical progress is given by $\Delta Y'$; the total increase in net output in one year is the sum of the three influences.

Therefore,

$$\Delta Y = V\Delta K + W\Delta L + \Delta Y' \quad (2)$$

Dividing both sides by Y, we get

$$\frac{\Delta Y}{Y} = \frac{V\Delta K}{Y} + \frac{W\Delta L}{Y} + \frac{\Delta Y'}{Y}$$

$$\text{or } \frac{\Delta Y}{Y} = \frac{V}{Y} \times \frac{\Delta K}{K} + \frac{W}{Y} \times \frac{\Delta L}{L} + \frac{\Delta Y'}{Y} \quad (3)$$

$\frac{\Delta Y}{Y}$ = the annual proportionate rate of growth of output.

$\frac{\Delta K}{K}$ = the annual proportionate rate of growth of the stock of machinery.

$\frac{\Delta L}{L}$ = the annual proportionate rate of growth of labour productively employed.

$\frac{\Delta Y'}{Y}$ = the annual proportionate rate of growth of output due solely to technical progress.

Meade denotes these four proportionate rates of growth as Y , K , L and R respectively.

$\frac{VK}{Y}$ = the proportionate rate of net national income which would be paid in the net profits.

This is denoted by U and represents the proportional marginal produce of machinery. Under the assumption of constant returns to scale, it is equal to the proportion of the national income received in profits.

$\frac{WL}{Y}$ = the proportional marginal product of labour and is equal to the

proportion of the net national income going to labourers as wages under conditions of constant returns under competitive equilibrium. This is denoted by Meade as Q .

Therefore, equation (3) can be written as

$$y = Uk + Ql + r \quad (4)$$

"Which shows the growth of output (y) as being the weighted sum of three other growth rates, namely the sum of the growth rate in the stock of machines (K) weighted by the marginal importance of machinery in the productive process, i.e., in a competitive equilibrium by the proportion of the national income going to profits (U) plus the growth rate of population (l) weighted by the marginal importance of labour in the productive process or, in a competitive equilibrium by the proportion of income going to wages (Q) plus the growth rate of technical progress (r)."

$$\text{Equation (4) can be rewritten in the form : } y - l = Uk - (1 - Q)l + r \quad (5)$$

Since $y-l$ is the difference between the growth rate of total output and the growth rate of the working population, it measures the growth rate of real income per head. For instance, if total real income is increasing by 10 per cent per annum, but the working population is growing by 8 per cent per annum income per head will be rising by approximately 2 per cent per annum. Equation (5) states that the growth rate in real income per head ($y - l$) is the outcome of three factors.

—First, it is raised by the growth rate in real capital (k) weighted by its proportional marginal product or by the proportion of the net national income which would be paid as profits in a competitive equilibrium (U);

—Second, it is depressed by the growth rate in the working population (l) weighted by one minus the proportional marginal product of labour ($1 - Q$), and

—Third, it is raised by the rate of technical progress (r).

The second of these three elements, [namely, $-(1 - Q)L$] which tends to depress the growth rate of real income per head is, of course, the familiar tendency for diminishing returns to labour to set in as more and more labour is applied to any given amount of land and capital equipment.

The element uk in equation (5) can be expressed in other forms. U , is $\frac{VK}{Y}$

and K the growth rate of the stock of machines, equals $\frac{SY}{K}$ where S is proportion of the

net national income that is same. We have

$$U_k = \frac{VK}{Y} \cdot \frac{SY}{K} = SV = 1$$

"Which expresses in three forms the same thing, namely, the contribution which capital accumulation is making to the growth rate of final output." Accordingly, the basic relationship between the growth rate of real income per head and its three basic determinants can be expressed in the following three ways :

$$y - l = U_k - (1 - Q)l + r$$

$$y - l = SV - (1 - Q)l + r \quad (6)$$

All these equations yield the same result. For example, let us suppose that people save 1/10 of their income ($S = 1/10$) and that the marginal product of real capital goods or the market rate of profit is 5 per cent per annum ($V = 5$ per cent per annum). Then the contribution of capital accumulation to the growth of output SV would be 1/10 of 5 per cent per annum, i.e., 1/2 per cent per annum. The explanation of this is that, "If out of a year's income of Rs. 1,000 people save 100 units of product ($S = 1/10$) and if a once-for-all addition of 100 units of the stock of machines increases annual output in every future year by 5 units ($V = 5$ per cent per annum), then the initial annual income of 1,000 will be raised by this year's capital accumulation to 1,005 or by 1/2 percent in the course of the year ($SV = Y = 1/2$ per cent per annum.)".

If we assume the initial annual income to be 1,000 and the initial stock of machines to be 2,000 then $Y = 1,000$ and $K = 2,000$.

The same thing can be expressed by saying that the stock of machines had increased from 2,000 to 2,100 or by 5 per cent in the year (i.e., $K = 5$ per cent per annum). Then

$$U = \frac{VK}{Y} \frac{(5/100)}{1000} \times 2000 \times \frac{1}{10} \text{ and } SV = \frac{1}{10} \times 5 = \frac{1}{2} \text{ per cent per annum}$$

Thus, the contribution of capital accumulation to the growth rate of final output was 1/10 of 5 per cent per annum or 1/2 per cent per annum.

Now, the question arises that, is growth likely to feed on itself and to become more and more rapid or is it likely to become less rapid as the economy develops?"

For this, Meade starts with the basic growth relationship in the form

$$y = U_k + Ql + r \text{ and}$$

$$y = VS + Ql + r$$

The growth rates of population and of technical knowledge (l and r) are taken to be exogenous and constant over time. In this situation (as shown in Fig. 1) whether y is rising depends upon whether U_k (+ VS) and Q are rising. Let us start with the special case where l is zero, i.e., population is constant. In this situation, the

growth rate in the standard of living becomes

$$y = VS + r \quad (7)$$

If the rate of technical progress, r is taken to be constant, the question whether y is rising or falling depends on whether VS is rising or falling over time. This problem is depicted in the following figure :

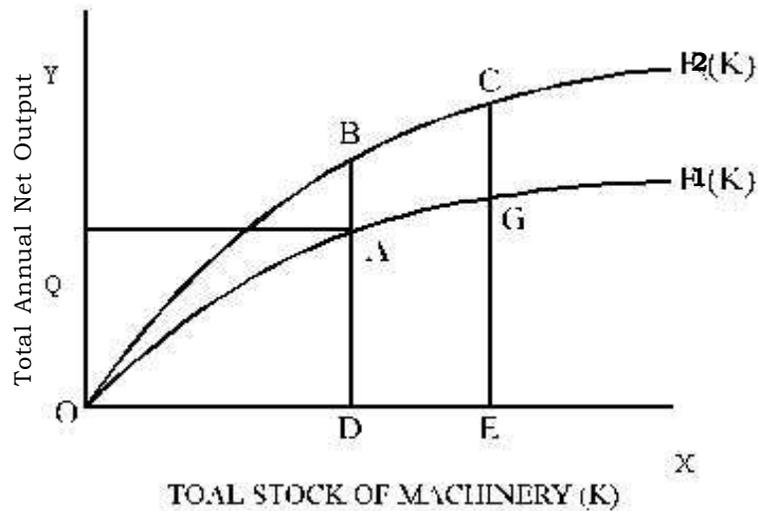


Fig. I

Total annual net output (Q) is measured on y-axis and stock of machinery (K) or the output (Q) which is the state of technical knowledge in year 1 would be produced by any given amount of machinery (K) is measured on x-axis. If the amount of machinery in year 1 is OD , the output in that year would be AD . The slope of the curve at A measures the marginal product of machinery or due to the nature of the assumptions involved, the rate of profit which would be earned on a machine if machine-owners received earnings equal to the marginal net product of machinery, (V). The slope of the curve becomes less and less steep as we move towards the right on account of the operation of the law of diminishing returns to machinery.

Because of technical progress, the new F_2 curve at year 2 (i.e., the F_2 curve) is higher than the curve F_1 . With the same amount of machinery OD , we can now produce BD due to technical progress. The rate of technical progress (r) is given by AB/AD . "This technical progress will be machine using (or machine-saving), if it raises the marginal product of machinery in a proportion which is greater (or less) than the rate of technical progress itself. In other words, if the technical progress is neutral in its effect on machinery, the slope of F_2 at B will be greater than the slope of F_1 at A in the same proportion as the output BD is greater than the output AD . If the slope of the F_1 curve between A and B has risen by more than this, the technical progress is machine-using, if by less than this, it is machine saving."

If there is a change in the working population and the proportion of income saved, then in that situation the forces at work affecting the growth rate of the national income will be as follows :

1. Since $y = Uk + Ql + r$, anything which tends to raise the rate at which equal capital is being accumulated (k) will raise the growth rate of the national product (y). Since $k = SY/K$, there are two things that can cause K to increase over time : (i) the rise in the ratio of income to capital (Y/K), and (ii) a rise in the proportion of income saved (S).

2. If S is itself growing, the rate of capital accumulation and so the growth rate of the national product will also tend to be growing. S can increase due to two reasons : (i) the real income per head from which saving can be made is itself increasing, and (ii) S might be rising because of a change in the distribution of income.

3. High elasticities of substitution between the factors of production will tend to cause the growth rate of the national product to be rising, while low elasticities of substitution between the factors will tend to cause the growth rate of the national product to be falling.

4. Technical progress can induce an increase in the growth rate of the national product.

The State of Steady Economic Growth

Here Meade makes certain changes in his assumptions. Instead of assuming a constant population, he assumes that it is growing at a constant proportionate rate L . The rate of technical progress is assumed to be constant. A state of steady economic growth requires that the growth rate in total output (Y) be constant. Since population is assumed to grow at a constant rate L , the implication is that the growth rate in income per head ($Y - L$) is also constant.

Meade shows that a state of steady economic growth is achieved if the following conditions are fulfilled :

- (i) All elasticities of substitution between the various factors are equal to unity.
- (ii) Technical progress is neutral towards all factors, and
- (iii) The proportions of profits saved, wages saved, and of rents saved—all three are constant.

Let S_v represents the proportion of profits which is saved. Since total profits are UY , this means that $S_v UY$ represents the amount of profits which are saved. Similarly, $S_w QY$ and $S_g ZY$ represent the amount of wages and of rents which are saved (U , Q and Z are the proportions of the national income going to profits, wages and rents respectively). Total savings are SY , where S is the proportion of the total national income which is saved. Since total savings equal the sum of the above three sources of savings we have

$$S = S_v U + S_w Q + S_g Z \quad (8)$$

Conditions (i) and (ii) given above imply that U , Q and Z are all constant, while condition (iii) implies that S_v , S_w and S_g are all constant. It follows that S , the ratio of total savings to total national income will also be constant.

Now the rate of growth of output is given in equation (4) as

$$y = Uk + Ql + r$$

Since L and r have been assumed to be constant, while conditions (i) and (ii) ensure that U and Q are constant, Y will be constant if and only if K is constant. Now K , the growth rate of capital stock, equals SY/K , since SY is the amount added annually to the capital stock through savings. But S is constant. Therefore, K is constant if and only if Y/K , the ratio of annual national income to the value of the capital stock is constant. But this is possible only if Y and K both grow at the same proportional rate per annum. In other words, Y/K will be constant if $Y = K$. So it can be concluded that if the growth rate of national income is to be constant, it must be equal to the growth rate of the capital stock.

Critical Growth Rate

The implication of the above analysis is that if there has to be a state of steady economic growth in the economy (that is, if growth rate of national income is to be constant), we must find out that growth rate of capital stock which makes the growth rate of output (or income) equal to the growth rate of the capital stock. Meade designates this rate as the 'critical' growth rate of capital stock. If it is denoted by the symbol a , then according to equation 4.

$$a = Ua + Ql + r$$

$$\text{or } a - Ua = Ql + r$$

$$\text{or } a = \frac{Ql + r}{1 - U}$$

(9)

Thus, if the growth rate of the capital stock is $\frac{Ql + r}{1 - U}$ then the growth rate

of the national income will also be $\frac{Ql + r}{1 - U}$, and in accordance with the arguments

given above, the growth rate of the national output will then be constant at this level. This is a state of steady growth. If the growth rate of capital stock, K (which is equal to SY/K) is greater or less than this critical level, forces will set

in to make it equal to $\frac{Ql + r}{1 - U}$. For example, let us start by assuming

that : $\frac{Sy}{k} > \frac{Ql + r}{1 - u}$ The meaning of this statement is that the rate of capital accumulation is greater than the critical rate and this will cause the capital stock (K) to grow at a greater proportionate rate than income (Y).

Therefore, as long as $\frac{Sy}{k} > \frac{Ql + r}{1 - U}$, Y will be growing at a lower proportionate

rate than K , $\frac{Y}{K}$ will be falling and with S constant $\frac{Sy}{K}$ will also be falling. In other

words, "If K starts growing above the critical steady growth level of $\frac{Ql + r}{1 - U}$, the capital

stock will grow more rapidly than income, and, as savings grow only in proportion to income, the ratio of savings to the capital stock or the growth rate of capital will be falling towards the critical level $\frac{Q_1 + r}{1 - U}$."

$$\frac{Q_1 + r}{1 - U}$$

It can similarly be shown that if K started at a level below the critical steady growth level of $\frac{Q_1 + r}{1 - U}$, then income would increase faster than capital, so

$$\frac{Q_1 + r}{1 - U}$$

that savings would grow more quickly than the capital stock and the growth rate of the capital stock would accordingly rise towards the critical growth rate of level $\frac{Q_1 + r}{1 - U}$

$$\frac{Q_1 + r}{1 - U}$$

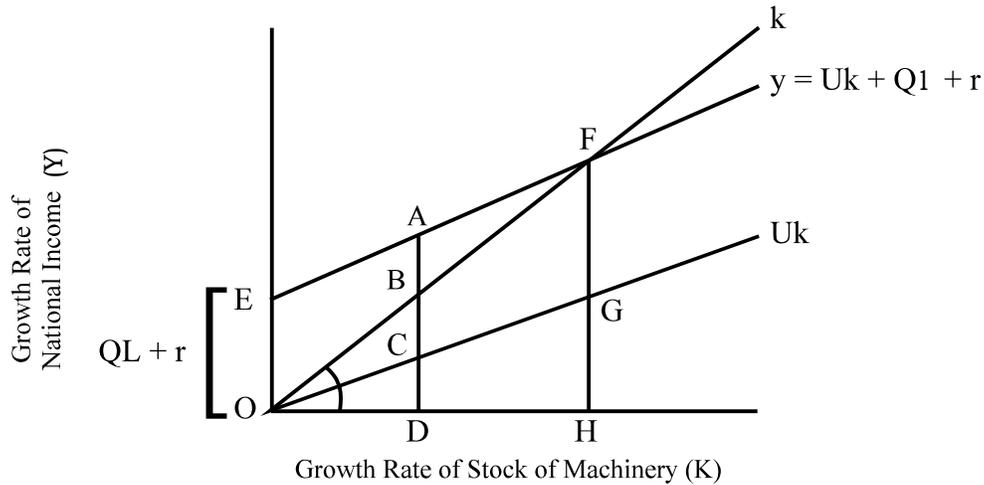
From this analysis, Meade concludes that "If the growth rate of the population were constant; if the three elasticities of substitution between the three factors land, labour and machinery were all unity; if technical progress were at a constant rate and neutral towards all factors; and if the proportion of profits, of wages, and of rents saved were all three constant; then the growth rate of real income and of the stock of machinery would both tend towards a constant level equal to $\frac{Q_1 + r}{1 - U}$

$$\frac{Q_1 + r}{1 - U}$$

The arguments given above can also be presented in diagram. In the following Fig.2 the growth rate of the stock of machinery (K) is measured on the horizontal axis and the growth rate of the national income (Y) is measured on the vertical

axis. The line OCG is drawn through the origin with a slope $\frac{CD}{OD} = \frac{GH}{OH} = U$, the proportional marginal product of machinery. The height of $\frac{OD}{OH}$ this line represents that part of the growth of national income which is due to the growth of stock of machinery and is equal to UK. Next, a distance OE equal to $Q_1 + r$ is measured on the vertical axis and a line EAF parallel to the line OCG is drawn. Then points on this line measure the total growth rate of the national income. For example, if OD is the actual growth rate of the stock of machinery, AD = $(UK + Q_1 + r)$ represents the total growth rate of the national income which is constituted of two parts—CD and AC. CD (= UK) represents the total growth rate of the national income due to the growth of population and the technical progress. Now a straight line OBF is drawn through the origin O, so that BD = OD and FH = OH. The height of this line, therefore, measures the growth rate of the stock of machinery (K).

Fig. 2



Let us now assume that we start with a growth rate of the stock of machinery equal to OD and thus to BD. Then the growth rate of the national income will be AD. However, at this point the growth rate of national income is greater than the growth rate of the stock of machinery ($AD > BD$). This implies that the ratio of income to capital stock of machinery (Y/K) will be rising.

Now since $K = SY/K$ where S is constant, therefore, a rising Y/K means that K itself will be rising. Thus, the economy moves from point D towards point H . On account of the above reasoning, K will continue to grow until the point D ultimately coincides with point H . By a similar reasoning we can show that if we start from a point towards the right of H (i.e., the value of K is greater than OH), K would be greater than Y so that Y/K would be falling. Since S is constant, this implies that K itself is falling. Thus, there will be a tendency for K to decrease and ultimately come down to the point H . Thus, point F represents the state of steady growth at which $Y = K$. Since $GH = UK$ and $FH = K$, FG must be equal to $(1 - U)k$. Now $FG = OE = Ql + r$. Therefore, at the point F , $(1 - U)k = Ql + r$ or $K = \frac{Ql + r}{1 - U}$.

This then is the value which Y and K will both have in the state of steady economic growth.

1.10.2 JOAN ROBINSON'S MODEL

Joan Robinson's model of economic growth was presented in her book *'The Accumulation of Capital'* which was published in 1956. Her model stated in verbal terms and owes its mathematical formalization to Kenneth K. Kurihara.¹

1.10.2.1 Assumptions

The basic assumptions of Joan Robinson's model are :

- A closed system of economy with laissez faire prevails. Government plays no part in economic affairs.

1. Kenneth K. Kurihara, *The Keynesian Theory of Economic Development* (London, George Allen and Unwin Ltd., 1959), pp. 73-80.

- There are only two productive factors, viz, capital and labour and the whole product is distributed among entrepreneurs and the wage-earners.

- Wage-earners spend all their wage income on consumption, while profit-takers save and invest all of their profit income.
- Capital and labour are combined in fixed proportions to produce a given output. This assumption is, however, relaxed by Robinson to allow for "The complications of reality."

1.10.2.2 The Model

The basic equation giving the distribution of national income among the entrepreneurs and the workers is given by

$$PY = WN + pK \quad (1)$$

- where
- Y = net national output
 - N = the amount of labour employed
 - K = the amount of capital equipment utilized
 - P = the average price of output and capital equipment
 - W = the money-wage rate
 - p = the gross profit rate (including the interest rate)

Dividing both sides of equation (1) by the average price index P, we get,

$$Y = \frac{W}{P} N + \pi K \quad (2)$$

This is the distribution equation. In real terms profit rate, thus, becomes :

$$\pi = \frac{\frac{Y}{N} - \frac{W}{P}}{K/N}$$

Denoting Y/N by ρ (pronounced as 'rho') and K/N by θ (pronounced as 'theeta'), we get,

$$\pi = \frac{\frac{Y}{N} - \frac{W}{P}}{K/N} = \frac{\rho - \frac{W}{P}}{\theta} \quad (3)$$

This equation shows that profit rate depend on the technical relation of labour productivity (P), the real wage rate (W/P) and the capital-labour ratio. In other

words, "The profit rate is shown as capable of varying directly with the rate of net return of capital ($\rho - W/P$) and inversely with the coefficient of capital intensity (θ)."

The necessary condition for maximization is that the first derivation should be zero. This implies that maximum profits for entrepreneurs are obtained when

$$\frac{\rho - \frac{W}{P}}{\theta} = d \frac{\theta}{d\theta} = 0 \quad (4)$$

Subject to the production function

$$Y = F(N, K) \quad (5)$$

Now, let us view the expenditure side. Here the net national income should be equal to the sum of real consumption expenditure (C) and net real investment (I) in equilibrium, i.e.,

$$Y = C + I \quad (6)$$

$$S = I$$

According to assumption 3, consumption is done only by wage-earners, while savings come only out of the profits of the entrepreneurs, we must have

$$C = C_n = \frac{WN}{P} \quad \rho \quad (7)$$

$$\text{and } S = S_R = \pi K \quad (8)$$

Where C_n = Consumption out of wage income

and S_R = Saving out of profit income. Net investment involved in (6) is simply defined as an increase in real capital.

$$I = \Delta K \quad (9)$$

Substituting the value of S and I from (8) and (9) into (6) we get,

$$\Delta K = \pi K \quad (10)$$

Dividing both sides of (10) by K, we get,

$$\frac{\Delta K}{K} = \pi$$

Substituting the value of π in this equation from (3) we get,

$$\frac{\Delta K}{K} = \pi = \rho - \frac{W/P}{\theta} \quad (11)$$

Since $\frac{\Delta K}{K}$ indicates the rate of growth of capital ($\rho - W/p$) indicates

the net return to capital and θ is the capital-labour ratio, equation (ii) shows that "the rate of growth of capital is capable of increasing if the net return to capital rises in greater proportion than the capital-labour ratio."

1.10.3 QUESTIONS

(1) Long Questions

1. Critically examine one sector neo-classical growth model.
2. Explain determinants of the rate of economic growth in J.E. Meade's Model.
3. Explain the state of steady economic growth shown by J.E. Meade.

(2) Short Questions

1. What is critical growth rate ?
2. What are the assumptions of Meade's model ?

1.10.4 BOOKS

1. Branson, William H., (1983), *Macro Economic Theory and Policy*, Delhi, All India Traveller Bookseller, Ch. 22
2. Allen, R.G.D. (1967), *Macro-Economic Theory*, New York, St. Martin's Press, Chs. 13, 14.
3. Robinson Joan, *Essays in the Theory of Economic Growth*, London Macmillan & Co. Ltd., 1963.
4. Kurihara, Kenneth K., *The Keynesian Theory of Economic Development*, London George Allen & Unwin Ltd., 1959.

KALDOR'S MODEL OF ECONOMIC GROWTH

1.11.1 Introduction

1.11.2 Objectives of the Lesson

1.11.3 Kaldor's Model of Economic Growth

1.11.3.1 Assumptions

1.11.3.2 Operation or Working of the Model

(a) Model with Constant Working Population

(b) Model with Expanding Population

1.11.3.3 A Critical Appraisal of the Model

1.11.3.4 Kaldor's Model in U.D.Cs.

1.11.3.5 Conclusion

1.11.4 Summary

1.11.5 References

1.11.6 Suggested Questions

1.11.1 INTRODUCTION :

Nicholas Kaldor presented a model of growth in his book “An Essays on Economic Stability and Growth” in 1960. The main objective of Kaldor's growth model is to analyse the tendency of those **non-economic factors** which determine **long-term rate of equilibrium growth**.

1.11.2 OBJECTIVES OF THE LESSON

1. After having gone through this lesson you would be able to :
know the nature of non-economic variables which ultimately determine the rate at which the general level of production of an economy is growing.
2. understand why some societies grow much faster than others.
3. make a distinction of technical progress to capital accumulation.
4. describe all macro concepts used in the model expressed at constant price.

1.11.3 KALDOR'S MODEL OF ECONOMIC GROWTH

In this model, Kaldor has attempted to relate technical progress to capital accumulation in order to explain the growth process. Kaldor's model tells that even in the state of rising population the economy can be in a state of long-period stable growth and not be in a state of instability.

1.11.3.1 Assumptions

Main assumptions of Kaldor's Model of Growth are as under :-

- (i) There is full employment in the economy.

- (ii) Total output in the economy depends upon the availability of factors. It does not depend upon aggregate demand.
- (iii) Increase in productivity is the combined result of technical progress and capital accumulation.
- (iv) Income is distributed in the form of wage and profit.
- (v) Labourers and profit-earners both effect saving, but the saving capacity of profit-earners is more. Investment decisions of the entrepreneurs depend on rate of profit and level of output in the last year.
- (vi) All important elements used in the model, i.e., income, saving, profit, investment and capital etc. are expressed in terms of constant prices.
- (vii) Role of monetary policy is passive or the rates of interest have no role in the determination of investment.
- (viii) Choice of production technique does not depend on factor shares in national income i.e., on rate of profit and rate of interest. It depends on capital accumulation and the progress of technical know-how in capital goods industries.
- (ix) A fixed proportion of the total capital wastes in the form of depreciation every year.

Self-Check Exercise-I

Q.1. Write down three assumptions of Kaldor's model.

Ans. _____

1.11.3.2 Operation of Kaldor's Model or Working of the Model :

Operation of Kaldor's model will be studied under the following two stages :

(a) Kaldor's Model with Constant Working Population :

Working population remaining constant, growth rate of total real income (Y_t) is identical with growth rate of per capita real income (O_t). Operation of Kaldor's model can be explained with the help of following three basic functions :

- (1) Saving Function
- (2) Investment Function
- (3) Technical Progress Function.

(1) Saving Function :

According to Kaldor, at any given time period 't', total savings of the economy are equal to the sum of α part of profit (P_t) and β part of wage ($Y_t - P_t$), or

$$S_t = \alpha P_t + \beta (Y_t - P_t) \dots\dots\dots(1)$$

(Here $1 > \alpha > \beta > 0$)

α = Saving propensity of profit earners.

β = Saving propensity of workers.

Value of α and β is less than 2 and more than zero (0).

(2) Investment Function :According to Kaldor, initial investment of any given time period ‘t’ is equal to the actual saving of the previous period i.e., t-1 quantity of capital (K_t) at any given time period is equal to the aggregate of the product of the multiplication arrived at by multiplying α' part of the product of the previous time period (Y_{t-1}) and β' part of the rate of profit on capital

$\frac{r_{t-1}}{R_{t-1}}$ by Y_{t-1} , or

$$K_t = \alpha' Y_{t-1} + \beta' \frac{r_{t-1}}{R_{t-1}} Y_{t-1} \dots \dots \dots (2)$$

On the basis of equation (2) for the time period t + 1, following equation can be worked out.

$$K_{t+1} = \alpha' Y_t + \beta' \frac{r_t}{R_t} Y_t \dots \dots \dots (3)$$

Quantity of investment in time period ‘t’ is equal to the difference between stock of capital in time period ‘t + 1’ and stock of capital in time period ‘t’; or

$$I_t = K_{t+1} - K_t$$

By putting the value of K_t as given in equation (2) and that of K_{t+1} as given in equation (3), Kaldor's investment function can be known as follows :

$$\begin{aligned} I_t &= \alpha' Y_t + \beta' \frac{r_t}{R_t} Y_t - \left[\alpha' Y_{t-1} + \beta' \frac{r_{t-1}}{R_{t-1}} Y_{t-1} \right] \\ &= \alpha' Y_t - \alpha' Y_{t-1} + \beta' \frac{r_t}{R_t} Y_t - \beta' \frac{r_{t-1}}{R_{t-1}} Y_{t-1} \\ &= \alpha' (Y_t - Y_{t-1}) + \beta' \left[\frac{r_t}{R_t} Y_t - \frac{r_{t-1}}{R_{t-1}} Y_{t-1} \right] \end{aligned}$$

By adding and subtracting $\beta' \frac{r_{t-1}}{R_{t-1}} Y_t$ to the right side of the above equation,

$$I_t = \alpha'(Y_t - Y_{t-1}) + \beta' \left[\frac{P_{t-1}}{K_{t-1}} Y_{t-1} - \left(\frac{P_{t-1}}{K_{t-1}} \right) Y_{t-1} \right] + \beta' \frac{P_{t-1}}{K_t} k_t - \beta' \frac{P_{t-1}}{K_{t-1}} k_t$$

Or

$$I_t = \alpha'(Y_t - Y_{t-1}) + \beta' \frac{P_{t-1}}{K_{t-1}} k_t - \beta' \frac{P_{t-1}}{K_t} k_t \dots\dots\dots(4)$$

(Here $\alpha' > 0$; $\beta' > 0$)

Equation (4) indicates that investment at any given time period is a function of two types of changes in the previous time period: (1) changes in output and (2) change in the rate of profit on capital.

Self-Check Exercise-II

Q. 2. What do saving function and investment function indicate?

Ans. _____

(3) Technical Progress function :

Technical progress function expresses the relation between growth of output per worker (increase in productivity) and growth in capital per worker. In case of constant population, since growth of output per worker and growth of total output and growth in capital per worker and growth of total stock of capital are identical, as such technical progress function can be written in the form of the following equation

$$\frac{Y_{t-1} - Y_t}{Y_t} = \alpha'' + \beta'' \frac{I_t}{K_t} \dots\dots\dots(5)$$

(Here $\alpha'' > 0$ and $\beta'' > 0$)

Equation 5 shows that growth of output $\left(\frac{Y_{t-1} - Y_t}{Y_t} \right)$ is equal to coefficient of technical progress (α'') plus the multiple of capital per capita (β'') and net investment rate value $\left(\frac{I_t}{K_t} \right)$ of α'' is more than zero and the value of β'' is

between 1 and zero. Equation 5 shows that alongwith the growth of capital there is growth of output as well. Supposing in the initial condition of the economy, time period (t) is 1. It is full employment situation. With the help of K_1 capital, the economy's output is equal to Y_1 . Let us suppose in the previous time period (t-1) the quantity of capital and output was K_0 and Y_0 respectively. In equation 2 by putting 0 in place of t-1 and 1 in place of t, we get,

$$K_1 = \alpha' Y_0 + \beta' \frac{P_0}{K_0} Y_0$$

Or

$$\frac{K_1}{Y_0} = \alpha' + \beta' \frac{P_0}{K_0} \dots\dots\dots(6)$$

Similarly, equation 4 can be expressed as under

$$I_1 = Y_1 - Y_0 + \beta' \frac{P_0}{K_0} Y_0 - \beta' \frac{P_0}{K_1} Y_1$$

By dividing both sides by Y_1 ,

$$\frac{I_1}{Y_1} = \frac{Y_1 - Y_0}{Y_1} + \beta' \frac{P_0}{K_0} \frac{Y_0}{Y_1} - \beta' \frac{P_0}{K_1}$$

Or

$$\frac{I_1}{Y_1} = \frac{Y_1 - Y_0}{Y_1} \cdot \frac{K_1}{Y_0} + \beta' \frac{P_0}{K_1} - \frac{P_0}{K_0}$$

(As equation 6 indicates $\frac{K_1}{Y_0} = \alpha' + \beta' \frac{P_0}{K_0}$)

$$\frac{I_1}{Y_1} = \frac{Y_1 - Y_0}{Y_1} \cdot \frac{K_1}{Y_0} + \beta' \frac{P_0}{K_1} - \frac{P_0}{K_0} \dots\dots\dots(7)$$

Equation no. 7 shows that investment in any form of income in time period 1 is equal to (i) growth rate of income in the previous period

$\frac{K_t - Y_0}{Y_1}$ multiplied by capital-output ratio $\frac{G_t}{Y_t}$ in the present time and (ii) β' part of the change in efficiency of capital $\frac{K_t}{K_0} - \frac{P_0}{K_0}$.

By putting 1 in place of t in equation no. 1. showing saving function :

$$S_t = \alpha P_t + \beta (Y_t - P_t)$$

$$S_1 = \alpha P_1 + \beta (Y_1 - P_1)$$

while dividing both sides by Y_1 , we get,

$$\frac{S_1}{Y_1} = \alpha \frac{P_1}{Y_1} + \beta \frac{Y_1 - P_1}{Y_1}$$

Self-Check Exercise-III

Q. 3. What does technical function of Kaldor model mean?

Ans. _____

(b) Kaldor's Model with Expanding Population :

Kaldor has also analysed the determination of long period equilibrium rate of growth under expanding population. The analysis has been studied under two situations :

(1) Model Relating to Developed Countries :

On the basis of Malthusian theory of population, Kaldor's model has two assumptions :-

- (i) At a given fertility rate in a society, the growth rate of population cannot exceed a given maximum rate, no matter at what rapid rate the real income increases.
- (ii) The rate of population growth will rise moderately as a function of the rate of growth of income over some interval of the latter before that maximum is realised. Suppose maximum rate of population growth is λ . The relationship between growth rate of population and growth rate of income is written in terms of the following equation :

$$I_t = g_t (g_t \leq 1)$$

$$I_t = \lambda (g_t \geq \lambda)$$

(Here I_t = percentage increase in income; g_t = percentage increase in population; λ = maximum growth rate of population)

Relationship between growth rate of population and growth rate of income in less populated developed countries is shown in Fig. 1.

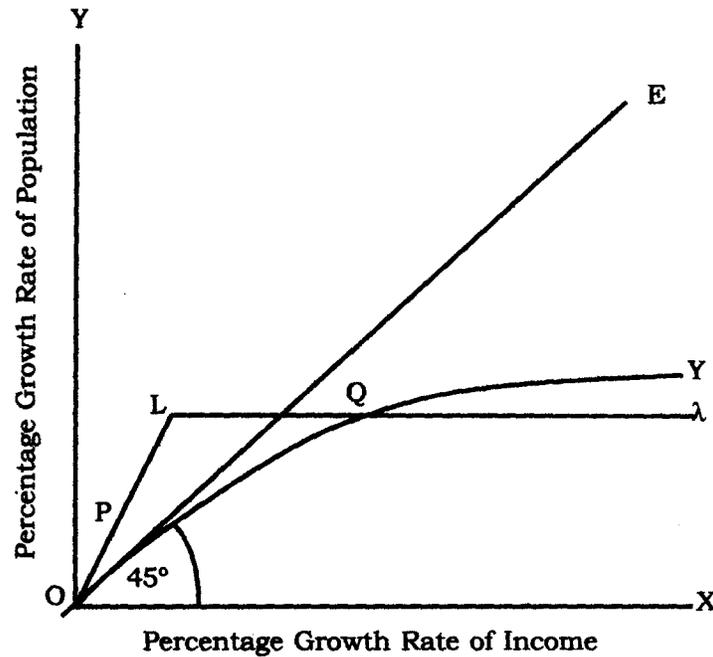


Fig. 1

In Fig.1 percentage growth rate of income is shown on OX-axis and percentage growth rate of population is shown on OY-axis. Growth rate of income is

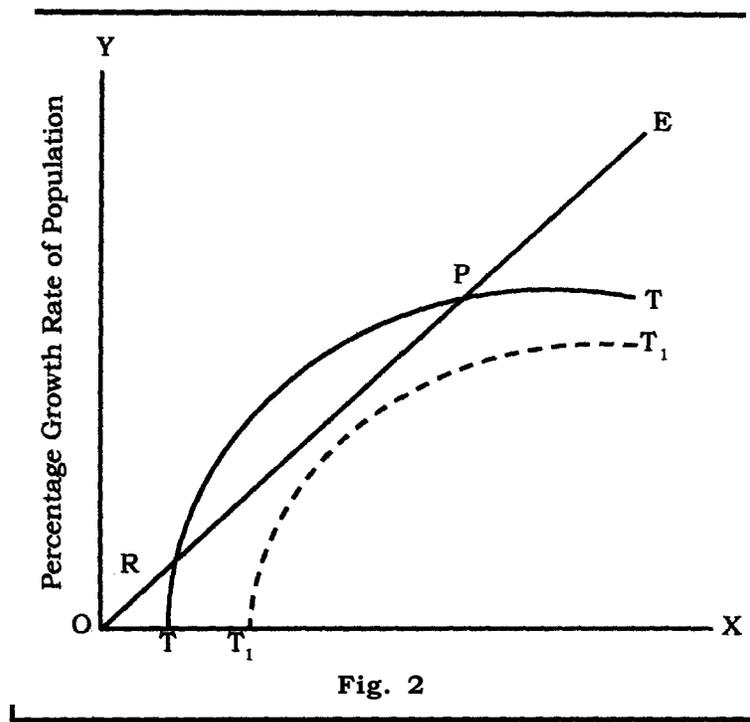
expressed as $\frac{1}{Y} \frac{dY}{dt}$ and growth rate of population is expressed as $\frac{1}{L} \frac{dL}{dt}$. OE (45°)

line represents the equality of percentage growth rate of income and population. PLλ represents growth rate of population. OY curve represents actual growth of income. In the beginning, up to point L growth rate of population is more than growth rate of income. At point L growth rate of population becomes maximum. Thereafter, Lλ part of PLλ line becomes parallel to OX-axis. At point Q, growth rate of population and growth rate of income are equal. But beyond this point, growth rate of population is less than growth rate of income.

(2) Model Relating to More Populated or Underdeveloped Countries :

Law of constant returns to scale does not apply to more populated countries. In these countries, it is the law of diminishing returns to scale that applies

because there is shortage of land and capital in these countries. In this situation, **productivity falls with increase in population.** In other words, as the population increases, output per worker goes on diminishing. As a result of it, the state and size of technical progress function is affected. How fast population rises determines, on the one hand, the extent to which technical progress function shifts-downward and, on the other, the nature of its curve becomes non-linear in:



On OX-axis is shown proportionate growth rate of output (income) and on OY-axis proportionate growth rate of population. OE (45°) Line represents the equality of both the growth rates (output and population). TT is technical progress function curve. It starts from OX-axis which means that to keep per capita output (OT) at constant level there must be some proportionate increase in per capita capital. TT curve touches OE line at point R and P. The economy will be in longterm equilibrium at point 'P' only. Point R represents a state of disequilibrium. Similarly, T₁T₁ curve, which is below technical progress function curve TT, also represents state of disequilibrium. It signifies state of stagnation. According to Kaldor, whether the expanding population would achieve long period equilibrium or not depends on how much the value of α (growth rate of productivity) is more than that of 1 (maximum growth rate of population). Higher this value greater will be the opportunities for the economy to go ahead

on the path to longperiod equilibrium.

1.11.3.3 A CRITICAL APPRAISAL : While making a comparative study of Kaldor's model of economic growth with earlier economic growth models, it can be safely argued that the Kaldorian model marks a definite advance over the other models of economic growth. His model is based on Keynesian tools and is dynamic in character. The chief merit of this model is that the concept of development depends upon the technical progress function. It acts as main engine of growth. Further, the division of the model in two stages - constant population and expanding population - is an attempt to reconcile the Harrodian warranted and natural rates of growth by demonstrating the long-run tendency for the two to converge by mutual interaction. The expanding population version of the model is particularly useful in demonstrating the effect of population growth on the growth of income in underdeveloped countries. Moreover, his model not only demonstrates the steady path of the economy, but also explains certain tools of growth process which have never been so explicitly taken by the other neo-classical economists. Despite the above virtue of the Kaldor model of economic growth, it is subject to criticisms which are given below :

(1) Based on Unrealistic Assumptions :

Kaldor's model of economic growth is based on certain unrealistic assumptions which do not hold true in the modern world. For example, the assumption of invariable shares in income saved is too much rigid. These shares tend to change over time depending on income growth and other factors.

(2) Fails to Explain the Determination of the Rate of Growth of the Economy :

Another criticism of the Kaldor model is that it does not explain the determination of the rate of growth of the economy, as has been explained in the Harrod-Domar models in terms of the volume of investment, saving-income ratio and the capital-output ratio.

(3) Self-Contradictory :

Another criticism of the Kaldor's model is that it is self-contradictory. For example, a continuous increase in prices has different results over spending and wage inflation. However, this model attributes all profits to capitalists and thereby implying that savings of workers are transferred as gift to capitalists which is clearly a contradiction because individuals will be able to save.

(4) Does not Give Reasons for Stability or Instability of the Economic System :

Another criticism of the Kaldor's model is that like the Harrod-Domar models it does not give the reasons for stability or instability in the economic system. Rather it analyses certain features of the growth process which emphasises

convergence and stability.

(5) Fails to Explain Distribution of Income :

Another criticism of Kaldor's model is that it fails as to how the distribution of income in functional sense will be affected by changes in the real income below the full employment level. Thereby, it does not explain any measure to increase the capacity and so full employment will be reached and this will bring about a relative increase in non-wage share in total income.

Q. Why Kaldor's model is criticised?

Ans. _____

1.11.3.4 KALDOR'S MODEL AND UNDERDEVELOPED COUNTRIES INCLUDING INDIA :

Kaldor's model is quite close to the real situations prevailing in the underdeveloped countries. The underdeveloped countries are generally faced with the problem of rapid population growth. Kaldor's model explains that when the population growth rate is equal to or exceeds growth rate of the economy, the technical progress function is adversely affected and the economy lands into a situation of pre-mature stagnation.

The two alternatives raising the value of technical progress or control of population as suggested by Kaldor's model are valuable for getting higher rate of growth specially in underdeveloped countries like India. However, despite numerous efforts made by the government, the growth of population has not been controlled in India like other underdeveloped countries. It requires abundant amount of capital, saving and investment, while the underdeveloped countries are always in the grip of deficiency of capital which retards capital accumulation and thereby vicious circle of poverty moves and later on it becomes extremely difficult to break it out. However, in the later stages of economic development, it might be possible to raise the value of technical progress coefficients while in the early stages, the values are low due to less propensity to save and invest. Thus, we conclude that the difficulties are of temporary nature which can be solved in due course of time. Thus, Kaldor's model is of great significance in underdeveloped economies.

1.11.3.5 CONCLUSION

In nut-shell, in spite of the above criticisms, Kaldor's model of economic growth occupies a great significance to the growth problems of under-developed

countries like India. The values of technical progress coefficients or control of population are of great importance.

1.11.4 SUMMARY

Kaldor model is based on assumption of constant population, where equilibrium rate of growth of income is identical with the equilibrium rate of growth of production and another assumption with expanding population in which the achievement of long period growth depends on the value of growth rate of productivity. Higher this value greater will be the opportunities for the economy to go a head on the path of long period equilibrium.

1.11.5 REFERENCES :

1. Lekhi, R.K. : The Economics of Development and Planning (Kalyani Publishers, New Delhi, 2004)
2. Kaldor, Nicholas : Economic Journal, Vol. 67, Dec. 1957 and “An Essay on Stability and Growth”, 1960.

1.11.6 SUGGESTED QUESTIONS :

1. Long Questions :

1. Explain critically the Kaldor's model of economic growth. What are the basic assumptions of this model ?
2. Discuss Kaldor's model of economic growth. Is it applicable in India ?
3. State and explain Kaldor's model of economic growth.
4. Explain how Kaldor's model is related to developed and under developed countries.

2. Write short notes on :

- (i) Saving function
- (ii) Investment function
- (iii) Technical progress function
- (iv) Expanding population.

POVERTY AND DEVELOPMENT : AMARTYA SEN'S VIEW**1.12.1 Introduction****1.12.2 Objectives of the Lesson****1.12.3 Amartya Sen's Model of Poverty****1.12.3.1 Identification of Poverty****1.12.3.2 Measurement of Poverty****(a) Head Count Ratio****(b) Income - Gap Method****(c) Sen Index****(d) Capability Based Definition****(e) Foundations of the Theory of Development****1.12.3.3 Critical Appraisal of Sen's Model****1.12.3.4 Conclusion****1.12.4 Summary****1.12.5 References****1.12.6 Suggested Questions****1.12.1 INTRODUCTION :**

Amartya Sen, a famous economist of 20th century, the first Indian and Asian economist who has been honoured with **Noble Prize** in Economics in 1998, is known as the philosopher of poverty. The prize relates to his path breaking authorship in "**Collective Choice and Social Welfare**". **Prof. Sen** wrote this book at the age of only 37. Prof. Sen earned the distinction of being the first non-American head of the American Economic Association in 1996. He is of the opinion that the state organisation and market economy have their own distinct roles like the system of planning and economic incentives. But both market economies as well as socialist economies cannot find solution to the problems arising out of the constraints of human capabilities. These problems relate to insufficient basic education, and health services, distortions in the system of ownership, and social classification and widespread gender discrimination. It is, therefore, essential that the process of economic reforms and the process of generation of opportunities should keep pace with each other. In fact, generation of opportunities should be given a greater thrust.

Self-Check Exercise-I

Q.1. What do you know about Amartya Sen?

Ans. _____

1.12.2 OBJECTIVES OF THE LESSON :

After having gone through this lesson, you should be able to know that how Prof. Sen has defined the concept of poverty in a totally different perspective. According to him “Poverty is the failure of basic capabilities to reach certain minimally accepted levels”.

1.12.3 AMARTYA SEN'S MODEL OF POVERTY :

Prof. Sen is of the opinion that the concept of poverty should be based on two objectives.

- (1) Identification of poverty, and
- (2) Measurement or assessment of the level of poverty.

12.3.1 IDENTIFICATION OF POVERTY :

In this case, Sen's view differs from the conventional approach. Criticising conventional approach, Prof. Sen offers a much rigorous and comprehensive view. Let us first define the conventional concept of poverty.

(a) CONVENTIONAL CONCEPT OF POVERTY :

The conventional belief is that poverty is the inability to satisfy basic or minimum needs. Basic or minimum needs of the individuals are determined according to two different methods :

- 1) **Direct Method :-** This method determines minimum needs of an individual in terms of the availability of certain necessities of life. Non-availability of the stipulated necessities is deemed as the situation of poverty.
- 2) **Income Method :-** This method determines minimum needs of a person in terms of some ‘income package’. Those deprived of the stipulated “income package” are deemed as poor or below **Poverty Line. The Poverty line is the line indicating a stipulated level of income which is bare minimum for the basic necessities of human life.** Poverty line may also be identified in terms of the stipulated level of consumption expenditure. **Thus, the poor are those whose income or consumption expenditure lies below the poverty line.** To explain, in urban areas of India expenditure of Rs. 264 per head (per month) and in rural areas, expenditure of Rs. 229 per head (per month) are taken as the cut-off points for poverty line. All those whose actual consumption expenditure is lower than the stipulated levels of Rs. 264 in urban areas and Rs. 229 in rural areas are deemed as poor or

below poverty line. According to this criterion, nearly 26% of India's population has been below poverty line. According to Prof. Sen, the poverty line concept is the income based concept for identifying the poor. If income based concept of poverty is used, it can be argued that poverty is not a matter of low well being but a matter of inability to pursue well being precisely because of the lack of economic means. **Prof. Sen** illustrates this point with an example. Suppose Mr. Rich has high income, he is capable of buying all the necessities of life. But being a miserly man, he is not willing to spend his income. Consequently, he lives a miserably low standard of living. But according to the income method he will not be called as poor. Thus, implying that a man who is actually living a miserable life may not be the one below poverty line. Or that level of living expenditure may not be a true index of poverty. On the contrary, an individual who lacks means/income for the stipulated minimum expenditure would be deemed as poor.

(b) LIMITATIONS OF THE CONVENTIONAL CONCEPT OF POVERTY :

Sen does not find the conventional concept of poverty as comprehensive as it should be. He elaborates the limitations of the conventional concept in his book '*Inequality Re-examined.*' He makes the following observations.

- (1) It ignores Capability :-** The conventional concept just focuses on the poverty line or a stipulated minimum level of income or expenditure. It ignores other determinants of poverty. Let us consider 2 persons : person A and person B . A has an income level somewhat lower than that of B. But B has a kidney problem and needs to go for dialysis which costs him a lot, who is poorer of these two : person A because his income is lower or person B because his capability is more restricted ?
- (2) It ignores Deprivation :-** In the descriptive form, identification of poverty is not acknowledgement of deprivation. To identify those who are actually deprived of depends upon a number of parameters including the overall economic conditions of the concerned country or society. It must be kept in mind that even when economic conditions differ in different countries, there are certain general functioning and corresponding capabilities, deprivation of which would definitely be an indicator of poverty.
- (3) It ignores the difference between Commodities and Characteristics :-** The income based concept of poverty fails to underline the difference between commodities and their characteristics. It ignores the fundamental issue whether poverty is to be defined in terms of the deprivation of commodities like wheat, rice, potato or in terms of their characteristics like calories and proteins. The problem would have been very simple provided a particular characteristic was the feature of a particular commodity only and there was no overlapping. In such a situation,

characteristic requirements could easily be converted into commodity requirements. But in real life situation, one particular characteristic requirement can be satisfied through a variety of modes. Thus, calorie or protein can be obtained through a number of commodities. Nevertheless, there are certain requirements like shelter which is a characteristic requirement and which can be fulfilled only through houses.

Self Check Exercise - 2

Q. What do you mean by poverty line?

Ans. _____

1.12.3.2 MEASUREMENT OF POVERTY :

In his book, '*On Economic Inequality*', Prof. Sen has propounded a new technique for the measurement of absolute poverty. There are three methods :

(a) HEAD COUNT RATIO (HCR) :

According to this technique, we first define poverty line; then identify the number of persons below poverty line; and finally, the number of persons below poverty line is divided by total population to ascertain poverty ratio, which is called Head Count Ratio. Thus, this technique involves three steps as under :

- (i) Determination of Poverty Line :-** As a first step, poverty line is determined in terms of some stipulated level of income. In India, for example, an individual whose monthly consumption expenditure is less than Rs. 264 in urban areas and less than Rs. 229 in rural areas (at 1993-94 prices) is deemed as below poverty line.
- (ii) Identification of the Poor :-** People below poverty line are deemed as poor. In India, 28 crore people were estimated to be poor according to the year 2000-01.
- (iii) Measurement of Head Count Ratio :-** Head count ratio is calculated by dividing total number of the poor by total population of the country. Thus, in India, 28% of the population was found to be below poverty line in 2000-01. HCR is determined as under :

$$H = \frac{q}{n}$$

Thus, H is obtained as the ratio between q and n where, q stands for number of people below poverty line and n stands for total population.

Limitations :

Prof. Sen identifies two limitations of this method :

- (a) This technique does not identify the gap between the stipulated level of income (corresponding to poverty line) and actual income of the poor. Implying that all poor people are simply treated as poor, differences in their income, notwithstanding.
- (b) This method does not account for the intensity of poverty. Here intensity of poverty means the difference between the stipulated level of income (corresponding to poverty line) and the actual income of the poor. Accordingly if some income of the poor is transferred to the rich individual, there would not be any difference in the Head Count Ratio.

(b) INCOME-GAP METHOD - (IG) :

According to this method, we estimate the gap between the per capita income of the poor and poverty line income. Intensity of poverty is proportionate to the size of the income gap. This method involves three steps.

- (1) Measurement of per capita income of the poor.
- (2) Determination of the level of income corresponding to poverty line and
- (3) Estimation of the income gap as the difference between poverty line income and per capita income of the poor.

Prof. Sen uses the following version of income gap method for the estimation of poverty. This difference is divided by poverty line income to find out the ratio of income gap. Prof. Sen has used the following formula to measure it.

$$I = \frac{z - M_p}{z}$$

(Here, I = income Gap; z = Poverty Line; M_p = Per capita income of the poor)

Limitations :

Prof. Sen considers income gap method as an incomplete technique for the estimation of poverty. Following are some of the notable limitations of this method.'

- i) **This method does not identify size of the poor population.**
- ii) **This method does not account for the distribution of income within the poor population.**

Q.3. Distinguish between HCR and IG.

Ans. _____

(c) SEN INDEX :

Amartya Sen's major point has been that the gap simpliciter approach will not

do. One has to take into account the distribution of income/consumption among the persons *below* the poverty line. If the gap had to be filled externally, and on a continuous basis year by year, one had to assume that the initial distribution below the poverty line would remain more or less unchanged. Sen produced a neat formula, which he termed as the poverty measure, known as the Sen index.

$$P = [l + (1 - l) G] H$$

Where P is the poverty index, l is the measure of distribution, G is the Gini coefficient, and H is the head count proportion of the people below the poverty line. The measure of distribution generally used is the measure of the poverty line minus the mean consumption of people below the poverty line divided by the poverty line measure. If the poverty line measure is 100 rupees the mean consumption below the poverty line is 60 rupees, the mean consumption ratio per poor person would be $\frac{3}{5}l$, the Dandekar gap measure as a ratio would be $\frac{2}{5}$. If G is 0.40, and H is 40%, P would be equal to 56%. It is noted that the lower the Dandekar gap ratio, the lower would be P. If G is lower, the lower would be the Sen index. *Prima facie* any measure that reduces the skewedness of distribution below the poverty line would reduce the index. When G is 0, all persons below the poverty line have the same level of consumption, the Sen index and the Dandekar gap ratio would be the same.

The procedure adopted by Sen seems to be treating the inequality measure above the poverty line and that below the poverty line as largely independent of each other. It is possible to reduce the measure of poverty without reducing the inequality above the poverty line. Any changes in the price index of the goods consumed by the poor would affect both the poverty line measure and the mean consumption below the poverty line, since it can be presumed that earnings below the poverty line do not get themselves indexed in respect of changes in the price index of goods consumed by them. A reduction in the price index of the goods consumed by the poor would reduce poverty index and an increase in the price index of goods consumed by the poor would increase the poverty index. Further, an increase in the population of the poor would reduce the mean consumption and may also move up the poverty line, if the production of wage-goods is characterised by diminishing returns. An improvement in the productivity of wage-goods leading to a relative fall in the index of prices of goods consumed by the poor would reduce the poverty index. Sen has not fully exploited the interpretative power of his formula. Such an exercise would probably lead to same results as in the wage-goods model !

The important points are that the Sen measure (index) is sensitive to changes in distribution parameter in the above poverty line groups, changes in the price

index of wage-goods, changes in the relative prices of wage-goods due to productivity changes in the latter etc. In an unindexed population below the poverty line, inflation would move up the poverty line measure, move down the mean consumption ratio of BPL groups, and also probably increase G. Inflation in the context of natural calamities like floods and droughts would increase the poverty measure in a number of ways. In inter-temporal comparisons numerous factors have to be taken into account in explaining the changes in the poverty measure. A constant poverty measure may imply compensating changes in the different parameters. A more fundamental difficulty is that the Dandekar gap ratio requires the mean consumption of people below the poverty line. This is the total consumption of people below the poverty line divided by the poor. If initially itself there had been less inequality in general in the whole population, the aggregate consumption of people below the poverty line would have been probably larger. Hence the mean consumption is affected by the measure of general inequality and if the latter comes down, the mean consumption would be higher. This then makes the Sen measure of inequality probably questionable.

Self-Check Exercise-4

Q.4. Explain Amartya Sen's index of poverty.

Ans. _____

Amartya Sen proposes the following general index of poverty.

$$P = A\left(\frac{1}{n} \sum_{i=1}^q (y_* - y_i)^{r_i}\right) \dots\dots\dots(1)$$

where q = number of income units at or above the poverty line, $Y_* - Y_{(i)}$, r_i = the weight of income recipient on the poverty gap, $Y_* - Y_i$, such that $r_i \leq r_1$, whenever $i > j$; $A(Y, n)$ = a parameter depending upon the total income (Y) and number (n) of all income units in a given population. Sen defines his income units as individuals earning a positive income. The income distribution is represented by the income vector, $y = (y_1, y_2, \dots\dots y_n)$. The ranked distribution can be written as

$$y_{(1)} \leq y_{(2)} \dots\dots\dots \leq y_{(n)} \dots\dots\dots(2)$$

so that the range of the distribution is $R_n = y_{(n)} - y_{(1)}$. The average income of the population is $z = Y/n$, where $Y = y_{(1)} + y_{(2)} + \dots\dots\dots + y_{(n)}$. If r_i is selected proportional to $(q - i + 1)$, then definition (1) takes the form :

$$P = \frac{2}{n^2z} \sum_{i=1}^q (y_i - y_1) (n - i + 1) g_i \dots\dots\dots(3)$$

Sen proposes a slight modification of the rank-dependent weights and rewrites (3) as

$$P = \frac{2}{n^2z} \sum_{i=1}^q (y_i - y_1) \left(\frac{n}{2} - i + \frac{1}{2} \right) g_i \dots\dots\dots(4)$$

and finally arrives at the following index after replacing z in equation (4) by y*

$$P = \frac{2}{n^2y^*} \sum_{i=1}^q (y_i - y_1) \left(\frac{n}{2} - i + \frac{1}{2} \right) g_i \dots\dots\dots(5)$$

According to Sen, the measure of poverty as formulated in equation (5) is superior both to the usual head count ratio q/n, as well as the standard measures of relative inequality.

Index (5) can also be written as the weighted average of the relative poverty gaps, $d_i = (y_i - y_1)/y_*$ and weights $W_i = 2 \left(\frac{n}{2} - i + \frac{1}{2} \right) g_i q^2$:

$$P = w_1d_1 + w_2d_2 + \dots\dots\dots+w_9d_9 \dots\dots\dots(6)$$

The Lorenz-Gini index of income inequality for the entire distribution based on ungrouped data can be written as :

$$G = 1 + \frac{1}{n} - \frac{2}{n^2z} \sum_{i=1}^n (b_i - i + 1) g_{(i)} \dots\dots\dots(7)$$

and a similar index for the ‘poor’, i.e., for incomes $y_{(1)}, y_{(2)}, \dots\dots\dots y_{(q)}$, can be shown to be

$$G_* = 1 + \frac{1}{q} - \frac{2}{n^2z} \sum_{i=1}^q (b_i - i + 1) g_{(i)} \dots\dots\dots(8)$$

Equation (6) defines poverty measures as a weighted average of the relative poverty gaps, d_i , from the pre-determined poverty cut-off, y_* , the weights having been chosen on a selected welfare basis; y_* , is, in fact, the q-th fractile for the entire distribution. On this basis one might compute the magnitude of income support needed by the poor, in order that every person in poverty gets the same enhanced income y_* . Index (6) bears a simple relationship with income inequality within the group considered poor on the basis of the minimal income cut-off y_* :

$$P = \frac{1}{n} \sum_{i=1}^k \frac{Z_i}{y_i} \frac{Z_i}{y_i} G_i \dots \dots \dots (9)$$

Thus, poverty and income inequality among the poor are directly related. If, instead of (6) one chooses Sen's formula (5), the poverty index assumes an elegant form that incorporates the head count ratio, the mean and inequality within the class of poor.

According to Sen, the data requirement to estimate P is less than what is needed to draw the Lorenz curve or to calculate the Gini co-efficient, both of which are widely practised. This may be true if the population of income recipients is finite and individual incomes are available. However, in large populations for which income data are not available in ungrouped form, Sen's claim can be questioned. When one is asked to compute the poverty index there are many practical problems which cannot be easily brushed aside. Sen, being also a philosopher, prefers not to get involved with the tough statistical computations and instead uses his economic logic and description which, no doubt, has a larger appeal.

(d) CAPABILITY BASED DEFINITIONS OF POVERTY :

The Nobel citation makes a reference to the concept of *capabilities* developed by Sen as a better index of well being than *commodities* or *utilities*. Capability is defined by Sen as the ability to transform Rawlsian primary goods to the achievement of well being. Rawlsian primary goods are “things that every rational man is presumed to want, and include income and wealth, the basic liberties, freedom of movement and choice of occupation, powers and prerogatives of offices and positions and responsibilities and the social bases of self-respect. Primary goods are, thus, general purpose means or resources useful for the pursuit of different ideas of the good that the individuals may have.” Capability of a human being is his ability of *functioning* in different capacities in society such wise as to enable him to achieve the components or the constituents of his well being. Such functioning ability concretely implies access to adequate and nutritious food, some measure of general and probably technical education, medical and health care facilities and a measure of security regarding the availability of the above. Sen has helped to induct indicators regarding the above in the human development index. A separate capability index for different countries has also been developed. Capability includes also an environment of freedom of choice and ability to make use of the various freedoms. Capability is taken for granted in conventional welfare economies, but in many countries even in rich societies all human beings do not have the ability to enjoy the opportunities provided by society. Equality of

opportunities does not imply equal ability to make use of such opportunities. This may be due to historical, sociological, genetic, as well as economic backgrounds of sections of society, which prevent them from taking the full benefits of the primaries mentioned by Rawls. Hence capability is prior to the attainment of the desired welfare level by individuals. (But, suppose we include Sen's capability-endowing commodities in the primaries of Rawls or we assume that Rawls' wealth and income would include the capability goods, what happens to the separate identity of capability?) Sen has gone on to argue that poverty is a result of capability failures. Such failures can occur in market economies as also in planned economies. Sen has a wide ranging critique of conventional welfare economics on account of neglect of the capability dimension. His ideas in this area are continuously evolving and further break throughs may be expected. One may venture on some comments on the concept of capability subject to the above.

In classical economics the goal of society is to maximise the ratio of surplus to the necessary costs. Such surplus can be used either for consumption enjoyment and/or for capital formation in physical and human categories. In standard economics, in recent years, the emphasis has been on the enjoyment of utilities as a result of consumption. Alfred Marshall brought in the concept of the maximisation of net consumers' surpluses including non-overlapping producers' surpluses over one's lifetime. It is also common to utilise measures like per capita real income as the measure of well being. Concepts of net welfare have also been devised. These exclude the measures of hidden costs like ecological and such damages. Sen is critical of many of these ideas. He has sought to provide an alternative to traditional welfare economics.

Capabilities of an individual implies economic capabilities. **Prof. Sen** is of the view that the concept of minimum standard of living would differ from economy to economy. However, in every economy, *the adequacy of the economic means cannot be judged independently of the actual possibilities of converting incomes and resources into capability to function*. Thus, he writes that an individual suffering from some chronic disease (say kidney failure or heart attack), even when he has higher level of an income compared to some other individual may, in fact, be relatively poor because he is forced to spend the bulk of his income on his medical treatment. Hence Prof. Sen concludes that identification of poverty in terms of income cannot be independent of the capabilities of an individual to reach a minimally acceptable level through direct income. In other words, lack of minimum capability is an equally important parameter as the lack of income for the identification of poverty line. Prof. Sen has presented commodities, characteristics, capability and utility in the term of following chain.

Commodities → Characteristics → Capabilities → Utility

The third link of the above chain i.e., capabilities is closely associated with the standard of living. The real indicator of poverty is the deprivation of capability.

(e) FOUNDATIONS OF THE THEORY OF DEVELOPMENT :

Prof. Sen's theory of development has been founded on three basic parameters which are as under :

- (1) **Endowments** :- Endowment is defined as the combination of all tangible and intangible resources legally owned by a person. In this definition, tangible resources include land, tools and implements as well as all cattle power.
- (2) **Capability** :- Prof. Sen defines capability as the ability to transform Rawlsian primary goods to the achievement potential of well being. Rawlsian Primary goods are things that every rational man is presumed to want, and include income and wealth, the basic liberties, choice of occupations, responsibilities and self-respect. Here well being includes nutritious food, health services, education and social security. Sen includes all these parameters in his capability index. This also constitutes the basis for Human Development Index which is often used by the World Bank for international economic comparisons.
- (3) **Economic Entitlement** :- It means as the set of all possible combinations of goods and services that a person can legally and socially obtain by using the resources of his endowment. Following are the notable features of the term 'entitlement' :
 - (i) Given his endowment, a person can obtain a set of different combinations of goods and services.
 - (ii) To obtain different goods and services, resource endowment can be used in different ways. For example, a farmer, by using his land, labour and other resources, can grow foodgrains. A worker can earn food for his family as a compensation for his work. A weaver, by using his labour and handloom, can produce cloth, which he can exchange for food for his family.
 - (iii) The use of resource endowment by a person must have a legal sanction from the society as well as the government.

1.12.3.3 CRITICAL APPRAISAL OF SEN'S MODEL :

1. Any satisfactory measure of poverty could serve a real purpose if and only if it facilitates making inter-temporal and inter-regional comparisons, which are essential for evaluating a policy or programme of democratic governments committed to social welfare. It would also enable us to explain the observed differences in the degree of poverty in terms of the intended

- shifts in the related economic parameters. Sen's measures, judged from this angle, are perhaps quite inadequate. Also, these measures assume that one has access to individual income data. If ungrouped data are available, it is possible to think of standard alternative measures, such as the co-efficient of variation, to measure the relative deviation (poverty depth) of income from any arbitrary income level. More importantly, in real life situations one cannot avoid sampling of one kind or another. If Sen's index is computed from a sample of incomes then what are its sampling properties, in small and large samples ? This question could be further complicated when the observed incomes are subject to serious non-sampling errors. Unless and until detailed Monte-Carlo tests are carried out, it is difficult to agree with Sen that his poverty measure is far superior to the numerous measures that already exist in the literature.
2. A general weakness in Sen's index is that it ignores prices. Changes in price level can affect the living conditions of the poor more adversely than those of the rich. To avoid the price problem, Mahalanobis (1962) made use of the quantity of cereals consumed by households and studied its per capita distribution among various groups of households classified according to per capita total monthly expenditure in current prices.

1.12.3.4 CONCLUSION :

In nut-shell, the concept of economic entitlement is applicable not only in market economies, but socialist economies as well. In socialist economies, economic entitlements imply the transfer of goods and services from the state to the citizens, on the basis of social norms or state regulations. In non-socialist economies also, the concept of social security further strengthens the concept of economic welfare and economic entitlements.

The concept of poverty is a multi-dimensional one and needs as such multi-disciplinary approach. Whenever a new measure of poverty is proposed there are problems in compilation, analysis and interpretation. Every measure of poverty or of inequality found in the economic literature was invented to address a limited problem. There is no single index indeed which has universal validity and answers all problems of welfare administration. Any measure of poverty must, however, depend upon a general agreement on the concept of 'income adequacy' in terms of a minimum income that is absolutely necessary for meeting the personal and social needs of every person in the given society. But this concept is itself dynamic, depending upon the state of economic development and social change.

1.12.4 SUMMARY :

Amartya Sen, Asia's first Noble Prize winner in Economic Science for his

contributions to modern welfare economics said that he would use every opportunity to bring poverty, inequality and deprivation more and more into public discourse. These problems are rampant in Europe and America also. In his view, the measurement of poverty, income, inequality and deprivation assumes relevance particularly for purposes of inter-temporal and spatial comparisons. He presented an axiomatic framework for the existing measures of income inequality and poverty. He established one to one relationship between poverty and income inequality within the class defined as poor with reference to a single transaction of the population at the poverty line. He tries to emphasise the depth of poverty and destitution as a social phenomenon completely overlooked by earlier economists who mostly used head count ratio in their poverty measurement.

1.12.5 SUGGESTED QUESTIONS :

I. Essay Type Questions :

1. Examine the problem of identification of poverty. How does Amartya Sen identify poverty ?
2. Explain different theories of measurement of poverty with a special reference to Sen index of poverty.
3. Elaborate Amartya Sen's model of poverty.

II. Short Answer Questions :

1. Explain Sen index.
2. Write a note on the concept of capability.

1.12.6 REFERENCES :

1. Sen, Amartya : Collective Choice and Social Welfare
2. Jhingan, M.L. : Economics of Development
3. Sen, Amartya : On Economic Inequality