UNIT 13 RATE, STRUCTURE AND SPREAD OF MODERN ECONOMIC GROWTH

Structure

13.0 OBJECTIVES

The study of economic growth of a Nation or a region, which means a sustained increase in the capacity to provide goods, is important—not only to know the rate of increase of the output given an increase in capacity but also the mechanism by which this rate is realised, sustained or impeded. This unit aims at acquainting you with modern economic growth of nations : its rate, structure and spread which is a distinctive phase in the history of eco-growth.

After going through the unit you will be able to:

- describe how western societies grew in material well-being over the last one and half to two centuries,
- discuss the mechanism which made it possible to achieve such high rates of growth in product per capita to signify it as a distinct epoch called the modern Economic Growth,

- and analyse why this rapid growth was limited only to the present day developed countries and did not spread in equal measure to the presently developing countries.

13.1 INTRODUCTION

Modern Economic growth has been identified as characterised by sustained increase in per capita or per worker product. This increase has most often been accompanied by an increase in population and usually by sweeping structural changes which simultaneously raised the productivity of the population. If therefore, modern economic growth implies marked rises in product per labour unit when population and, therefore, labour force are increasing it must be possible only through some major innovations. The natural question to answer here is, therefore, what are these rates and what is that innovation that has been exploited during this period? The epochal innovation that distinguished the modern economic growth is the extended application of science to problems of economic production. But before that, we take a look at the changes that has accompanied this innovation.

Modern economic growth based on application of science has given rise to what we now call significant, orderly and distinctive body of long · term economic experience. In contrast to the earlier periods, in modern times, on the basis of quantitative characteristics, it has been observed that modern economic growth has given rise to the process of industrialisation that went hand in hand with the process of urbanisation; besides this, the other characteristic features associated with modern economic growth that have been observed are:

a) In the relative economic position of groups within the nation distinguished by employment status, attachment to industries, level of per capita income etc. etc.;

b) In the distribution of product by use among household consumption, capital formation; towards innovation and basic sciences etc.

c) In the allocation of product by its origin within the nation and elsewhere; and

d) In the effect on economic growth of one nation on that of another.

In the rest of the Unit, therefore, we first discuss the meaning and measurement of economic growth alongwith the problems associated with its measurement, then bring together the basic characteristics of modern economic growth during the last one and one half to two centuries.

Besides high rates, the characteristics of modern economic growth upon which we shall dwell include industrial structure of labour force and National product, capital formation proportions (both cross section and long term trends), and finally the expansion in the volume and proportions of international flows of men, goods and capital. Discussion of tends in industrial structure would relate to:

a) the changing proportion contribution of the major sectors to aggregate product and their changing shares in labour force and other productive factors. Specifically, three shifts in productive structure, associated with modern economic growth are highlighted. First, the movement of labour away from agriculture due to high agricultural productivity usually referred to as industrialisation: second the change in structure within industry proper; and finally shifts in structure in the service sector.

b) Distribution of product and income. The discussion here deals with trends in factor shares as well as distribution of personal income by size for the developed countries and how that distribution supports the industrialisation process.

c) Broad classes of product use: household consumption, government consumption and capital formation.

d) International aspects of modern economic growth: the discussion relates to inter-dependence among developed countries and between them and the rest of

We shall bring the study of modern economic growth to an end by considering the questions about its spread. Specifically, we shall try to show higher growth made possible higher diversion towards basic sciences which through its application gave rise to still higher rates of growth, but rate of its spread, however, remained slow.

13.2 EPOCHAL INNOVATION: THE BASIS OF MODERN ECONOMIC GROWTH

The word 'modern' typifies the period of the last two centuries and possesses distinctive characteristics which give it unity and differentiate it from preceding periods. Economic historians identify such periods on the basis of certain innovations which provide a potential for sustained economic growth. Such innovations are so major that their exploitation and utilisation absorb the energies of human societies and dominate their growth for a period long enough to constitute what they call epochal innovation.

13.2.1 The Application of Science to Economic Problems

The epochal uniqueness that distinguishes modern economic epoch is the extended application of science to problems of economic production. We may call this long period 'the scientific epoch' in which countries not only witnessed the growth of basic sciences but also its application though changes in social organisations.

The history of civilisation tells us that most of humankind lived in poverty for thousands of years. Primitive technology of handicrafts and cottage industry were inadequate to meet the basic needs of everyone. The estimated growth rate was one per cent per century.

In the pre-modern era, simple trade, and somewhat later merchant capital dominated. With the changing times, usury and trade were supplanted by capital. In the 18th century mass production of goods started in a small area of England inhabited by less than three million. The beginning of mass production of goods in England is known as the start of industrial revolution. The industrial revolution was begun with invention of the based on the steam engine, the spinning and weaving looms.

Later, discoveries in physics, chemistry, mathematics and biology led to the application of science in industries based on iron and steel, cotton fibre, petroleum, power transmission, agriculture, medicine, energy and earth sciences. This was followed by technologies of mass production based on electric power, liquid fuel, radio waves, X-ray, Internal Combustion engine, electric motors.

Specifically, since the second half of the nineteenth century, the major source of economic growth in the developed countries has been science-based technology in the electrical, internal combustion, electronic, nuclear and biological fields, among others.

From England, industrial activity spread to European countries and then to USA and Nordic countries. Japan and USSR appeared on the scene during the depression of 1930s. In the post world-war II world, China, India, Indonesia, Brazil, Egypt and many countries of Eastern Asia joined in such industrial activity in a big way. One of the important features of this horizontal growth throughout has been application of science and scientific method in improving technology and production methods. The gap between science, technology and production has gradually been considerably reduced. Scientific and technology based methods of production have continuously and cumulatively improved and new ones replaced the older processes. Hand tooling by mechanical-electrical-electronic and bio-technical methods in that order. The result of all this has been improvements in the quality of the inputs used in production.

The application of science, however, requires a proper climate of human opinion in which both the pursuit and use of science can be fostered. Thus when we say that the modern epoch is distinguished by application of science to problems of economic production and human welfare we also imply that it is distinguished by a climate of human opinion, by some dominant views on the relation of man to the universe that foster science and its application.

Application of science via technology, therefore, requires changes in social institutions. New attitudes are needed to accommodate and foster adjustment of social institutions and practices to the exploitation of the potential provided by science-based technology. What are these attitudes?

13.2.2 Attitudinal Changes in Fostering Science

The broad views associated with the modern economic epoch suggested by Kuznets can be summed up in three terms: secularism, egalitarianism, and nationalism.

By secularism we mean concentratrion on life on earth as man's main concern, economic attainment being assigned the highest rank in this state of priorities. By egalitarianism, we mean denial of any inborn differences among human beings. This makes man a full-fledged participant in the community of men. Nationalism is the claim of community of feeling, grounded in a common historical past and its cultural heritage.

The epochal innovation that underlines modern economic growth spread very fast because of the acceptance of the above three as the way of life by the majority of humankind. However, it may be kept in view that (a) there may not necessarily be sharp breaks between economic epochs; and (b) even in modern times economic growth may not necessarily be science based.

For example, although British revolution was the first in history this in any case does not mean that it started from zero, or that earlier phases of rapid industrial and technological developments cannot be found. In fact British revolution was preceded by at least two hundred years of fairly continuous economic development, which laid its foundation. Unlike say, nineteenth century or twentieth century Russia, Britain entered industrialisation prepared and not unprepared. Also it is observed from economic history that some of the economic growth in modern times was due to a slow, trial-and-error process of learning. The partition of Africa late in the nineteenth century was, so to speak, a postcript to merchant capitalism within the new epoch, made possible by the steam railroads. Conversely, science based technological changes took place in earlier epochs also.

Furthermore, neither secularism nor egalitarianism is all-pervasive, even in the economically most developed countries; nationalism varies greatly in intensity, showing no close positive correlation with económic development. Therefore, all that we mean here is that science-based technology and the broad views needed for its successful exploitation by human societies were so dominant in the countries that sustained modern economic growth as to constitute a distinctive feature of the modern economic epoch.

Check Your Progress 1

1) What is the basis for calling the modern economic epoch 'the scientific epoch'? Give some illustrations.

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2) What were the main attitudinal changes that one associated with modern economic epch?

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3) Briefly explain the concept of modern economic growth?

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13.3 MODERN ECONOMIC GROWTH: DEFINITION, MEASUREMENT AND ASSOCIATED PROBLEMS

Economic growth of a nation generally speaking means a sustained increase in its output of goods and services. The increase must be sustained over a period long enough so that it reflects more than a cyclical expansion or an unusually large harvest, or a post-calamity recovery or some other transient rise.

13.3.1 Modern Economic Growth: the Concept

This definition is, however, quite general. An being so general it is not useful to the explanation of economic growth of nations in modern times, i.e. during the last one and one half to two centuries. Modern economic growth of nations has two distinctive features. Firstly, in all countries it involved a sustained and substantial rise in per capita product and secondly, in all cases it involved a sustained and substantial rise in population also. We, therefore, taking these features into account define economic growth as a sustained and substantial increase in per capita product often accompanied by substantial increases in population, and its productivity.

In this definition you see that we say **sustained** and **substantial** rise. The emphasis on a sustained and substantial rise particularly in per capita product is important because it has implications for both the structure and conditions of modern economic growth. For example, a cumulatively large rise in a country's per capita product necessarily means a shift in relative proportions of various goods demanded and used under given structure of human wants. It also means a major changes in combination of factor inputs, in patterns of lifestyle and in international relations. Also a rise in per capita product usually means an even larger rise in product per unit of labour input if population is also simultaneously rising.

Marked rises in product per labour unit, when population and, therefore, labour force are also increasing, would usually be possible only through major innovations. We, therefore, identify modern economic growth based on a system of production which makes increasing use of modern scientific knowledge. For we know if large increases in product per unit of labour are to be achieved it must be possible only through increased efficiency of inputs used. These are only possible by the use of improved technologies based on modern science.

Scientific knowledge continuously change such that older methods are replaced by new technologies. This has implications for the structural changes in the industrial system. New industries would appear and old would recede in importance. This in turn would call for the capacity of society to absorb such changes. Thus in the study of modern economic growth rise in per capita product is emphasized because of its implications for structural changes that originate in technological innovations and society's capacity to absorb such changes--changes in attitudes.

13.3.2 Measurement of Economic Growth and the Problems Associated with it

We have seen above that modern economic growth implies sustained rises in per capita product. We have also shown that it leads to major structural changes and correspondingly large modifications in social and institutional conditions under which the greatly increased product per capita is attained. Therefore, for purposes of measurement of modern economic growth the changing components of the structure need to be reduced to a common denominator. For, otherwise it would be impossible to compare for example the product of the economy of USA with that of China or for that matter the product of an advanced country today with its output a century ago. This is because many of the goods and industries that flourish today were unknown a century ago.

Reduction to a common denominator of the changing components of the structure calls for decisions regarding what to include and what to exclude, i.e. the question of scope, the question of netness and grossness and the basis of valuation of output which are usually treated in discussing conceptual problems in the measurement of national product. The other conceptual problems relate to subdivisions by industry of origin, factor and type of income, type of use, i.e. consumption and investment and domestic and foreign origin of output etc. All these concepts and their associated problems are already known to you as part of your first lessons in economics in your preparatory, foundation and first elective course in economics.

In those lessons we have told you that numerous problems arise when we attempt to reduce national product of differing compositions, originating under different social conditions to comparable aggregates that are divisible into additive parts. In these lessons we also gave you in detail the methods employed. Here we only enlist the major assumptions on which these thorny and essentially insoluble problems are usually resolved in actual measurement.

The basic assumption in reducing output to a common denominator relates to the weights that are attached to various outputs or productive factors. In that we assume that these weights are taken from one or a few societies and have meaning for all or atleast for most of them. This assumption facilitates comparisons over space as well as time. For if we do not assume this and instead accept that people today are radically different from their forbearers of fifty to hundred years no meaningful comparison over time would be possible. Similarly, if we assume that the inhabitants of USA and those of Russia are so different that food, clothing or labour and capital goods mean quite different things to them, comparison of the national product of the two countries likewise would be impossible.

In actual application, therefore, weights employed should be those of one or a few economies or of one or a few points in time; of the more developed rather than the less developed economies and of the more recent point of time rather than the earlier. An example of such an approach in the international comparison is found in the united nations estimates. It was based on the use of the purchasing power of USA dollar and has been generally followed since then by all concerned with this problem.

Likewise in the measurement of changes over time, output is usually expressed in constant prices of recent years and not in prices of the past. The rationale for such choices, over and above the greater availability of data for advanced economies, and for recent years lies in the fact that economic growth is generally evaluated from the vintage point of the higher levels already attained. Moreover, we live today and not in the past and the less advanced economies aspire to the levels of the more advanced and not vice-versa. Therefore, more advanced economies and the more recent times are best suited to the evaluation of economic growth.

The use of weights and concepts typical of advanced economies or of recent times have been criticized as they generally introduce a bias into comparisons. It is argued that the bias is such that it favours more advanced units or more recent periods. Here, there may be an upward bias due to: (a) the exclusion of the non-market bound activities. These are proportionately more in less developed than in more advanced countries, and in earlier than in more recent decades; and (b) the measures of output also do not make full allowance for the costs of the higher levels of output, greater costs of urban life etc., which are proportionately greater for advanced economies and for the more recent times. While this is true we should, however, not ignore that there are factors which make for a downward bias also. For example, the use of recent price weights tend to yield a lower rate of growth. Likewise the use of the price weights of the advanced countries tends to give many raw materials and simplier goods in the under developed countries higher standing than in fact they have.

Thus, it is not true that the common basis of valuation and treatment in international and intertemporal comparisons produces a bias that favours uniformly the more advanced economy or the more recent time only. In act these procedures under-estimate the differences across space or in the rate of growth over time. The problems of measurement will, however, continue to plague the statistical work. This, however, does not mean that the conceptual and other difficulties of measurement justify the refusal to measure for the empirical corroboration and testing. Therefore, without waiting for such time when we can resolve the statistical problems of index numbers which are used to reduce output to common denominator the empirical testing of economic phenomenon can be done subject to these problems.

Check Your Progress 2

1) Mention Kuznet's main findings with regard to rate of growth of population, per capita income and total product in his sample of 19 countries.

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2) Why did not population growth accompany economic growth in the modern economic epoch?

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3) What general observation can be made regarding whether the high rates of growth which are displayed when a nation enters into the modern epoch or not?

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13.4 RATES OF GROWTH AND ITS TIME PATTERN

The experience of what we now designate economically developed countries show that the rate of increase in population, per capita product and total product in these countries, over a period that extends over one and one half century since the industrial revolution in England, were unusually very high; not found in pre-modern periods. This is corroborated by Simon Kuznet's study.

13.4.1 Kuznet's Findings on Rates of Growth

Kuznets, in a sample of 19 countries, mostly developed, which covered roughly one third of the total world population and about one-fourth of the total number of countries of the world, found that for population, rate of increase ranged from 6 to over 20 per cent per decade. For per capita income the rates ranged from close to 10 to well over 20 per cent per decade. The rate of increase in total product was even higher. It never fell below 10 per cent per decade and ranged in most cases from 15 to over 40 per cent per decade. These rates were based on a time period of over half a century terminating in mid twentieth century in majority of the 19 countries. (See table I).

The pattern of growth, as observed by him, for the rest of the world, however, revealed a very startling fact. In purchasing power of the mid-twentieth century roughly half of the world population exhibited no more than 100 dollars per capita per annum income levels. This indicates that the rate of growth in per capita income over earlier decades in these countries could not have been very substantial. This shows that since the industrial revolution the industrial system spread to only a limited part of the world implying that the impact of technological and social changes that emerged from the industrial system did not advance the economic performance of the rest of the world to levels any where near those for most of the developed countries.

Having seen the rates and pattern of modern economic growth our next task is to see if these rates of growth can indeed be said to be very high: paculiar to this period only, and that if these rates exhibit some time pattern. This can be very easily answered by the following simple arithmetic calculation and the fact that science based technologies grew very fast during this period.

13.4.2 How High and Sustained were the Rates of Growth

A simple arithmetic calculation shows that if a rate of increase of 10 per cent per decade is sustained over a century, it means a rise to 2.6 times the initial value. The same over two centuries would cumulate to 6.7 times the initial value. Similarly, a rate of 20 per cent per decade will cumulate to 6.2 times the initial value over a century. In six of the 19 countries cosidered by Kuznets the rate of increase in per capita income was close to 20 per cent per decade and in four of these countries the period covered was very close to one century. Clearly these rates then would be very high which defy anybody's imagination.

That these rates were exceptionally very high can also be seen by extrapolating the observed rates backwards. If these were not exceptionally high rates then backward extrapolation of these will tell us that these countries will reach very low level of per capita income **too fast** to be historically true. For example, the extrapolation backward will give per capita income of 100 dollars in 1952-54 prices for most of the developed countries by the late 18th, early 19th or even the middle of the 19th century. Certainly, per capita income in UK in 1780 and in USA in 1795 was much higher than this level.

13.4.3 Were High Rates of Growth Peculiar to this Epoch?

The second question that these rates of growth were peculiar to this period only is corroborated by the historical evidence of the fast changing technologies based on science during this period.

A sustained high rate of growth cannot be achieved unless there is continuous emergence of new inventions and innovations. Only such a situation will provide the basis for new industries with high rates of growth to compensate the inevitable slowing down in the rate of growth of the older industries based on earlier inventions and innovations. Considerable shifting in relative importance among industries on balance will thus give rise to a high rate of overall growth in an economy.

We have already told you that there has been a tendency for scientific discovery, invention and innovation to concentrate at any given time in a few fields. To repeat here we refer you to the example of iron, steam and cotton textiles in the late 18th and early 19th century; electric power, communication and internal combustion engine in the late 19th century and Atomic energy replacing steam and electric era in the mid 20th century. The evidence both empirical and historical if taken together would reveal that without science based technologies and inventions these rates would not have been possible. In other words, science based technologies and inventions were necessary conditions of modern economic growth.

13.4.4 How long are these High Rates of Growth maintained?

The third suggestion that needs to be answered relate to the time pattern. Specifically, what we need to answer is; do the high rates which are observed when a nation enters into modern economic development maintained or do they decline and what are the reasons to expect such a systematic pattern?

The answer to this question will differ for various components of an economy; between old and settled countries and young countries. Nonetheless, some general observations can be made. The time pattern of growth in total product is a compound of those in growth of population and per capita product. Acceleration in the rate of growth of population, provided the rate of growth of per capita product does not decline, would necessarily produce acceleration in the rate of growth of total product. It would be further accelerated when the growth in the per capita product quickens. When both population and per capita product stabilize at a constant rate of growth, total product will also grow at a constant rate. When retardation in the rate of population growth begins, the growth of total product will be retarded, unless the rate of growth of per capita product begins at that point to accelerate which is highly unlikely. Thus, one may expect a long secular swing in the rate of growth of total product. Its phases of acceleration, constancy and retardation will follow the timing of the same phases between those for population and per capita product.

We know that the spread of the industrial system, since the eighteenth century was based on the additions made to scientific knowledge. This would imply much higher rates of growth of population, per capita product, and total product than before. At some period in the transition from pre-modern conditions to modern economic growth, therefore, there is likely to be a shift from lower to higher rates of growth. These shifts are, however, rarely, if ever, sudden. There would thus be substantial period during which the rate of growth would accelerate.

13.4.5 Behaviour of Population Growth during Epoch of Modern Economic Growth

Acceleration in the rate of growth of population occurs largely because new technology has the most immediate effect on death rates. Birth rates are affected only with considerable lag. Once the crude death rate is low, further absolute decline is limited; but no such limits are imposed on the crude birth rates. Therefore, modern technology will have early effect of accelerating the rate of growth of population. It is only in the later stages of modern economic growth in a country that it may be accompanied by a falling rate of natural increase, i.e. the excess of births over deaths as a percentage of total population. In the early phases of the use of modern technology to achieve a significant and sustained rise in per capita product is more difficult. For what is then required is not merely an increase in product commensurate with the increase in population, but a much greater rise sufficient to lift the level of per capita income in order to provide a basis for further sustained growth. From the data the timing of the acceleration in growth of per capita income relative to that in population cannot be determined. No a prior reasons is possible either. All that we know is that the acceleration in the rate of growth of per capita income begins after that in the rate of natural increase of population.

Reasons for the declining phase in per capita income are difficult to perceive. For example, it is difficult to imagine not only unlimited growth in any social process but equally no inherently compelling reasons for the rate of growth of per capita product can hardly be viewed as an important factor that will retard the rate of growth. Therefore, retardations in per capita income could at best be explained from the demand side. A long term rise in real income per capita would make leisure an increasingly preferred good. Therefore, one could argue that after a high level of per capita income is attained, the pressure on the demand side for further increases is likely to slacken and hence there would eventually be retardation in the rate of growth of per capita income, but it would come much later than that in the rate of growth of population.

Hence, as mentioned in the second para of this section, the definition of economic growth in terms of the changing pattern of industrial structure is more important, then simply a growth of income inper capita over a period of time. It is more so, in a study of the explanation of modern economic growth which is taken up in the next section.

Check Your Progress 3

1) What are the two ways in which the changes in industrial structure due to economic growth?

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2) What is the difference in a) the share of agricultural sector in the national product b) comparative product per worker between manufacturing and services and c) interesectoral inequality in income per worker, between groups of high per capita income countries and groups of low per capita income countries?

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3) Give reasons for the decline in the share of agriculture in the national product during the course of economic growth.

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13.5 MODERN ECONOMIC GROWTH: CHANGES IN INDUSTRIAL STRUCTURE

How industrial structure changes with economic growth can be studied in two ways. First employing some available index of economic growth such as national income per capita, we can, at a given point in time, array the countries by their income per capita, and observe the differences in the industrial structure as given by the occupational structure of labour force and of national income among countries. Statistically, we can find out correlation between income per capita and industrial structure. This would at least suggest what may be expected in most countries in the course of modern economic growth. The second, and more direct, approach is to study the long-term records for each country and ascertain the changes in industrial structure that actually occurred in the course of their economic growth.

Statistical findings on both these approaches are available. Some of the findings are now quite familiar and some are perhaps less known. We first summarise these findings.

13.5.1 Statistical Evidence

a) As we move from groups of countries with high per capita income to those with low, the share of the agriculture sector in the labour force increases, while the share of the manufacturing and the services sector decreases. And the positive association between per capita product and the share of the service sector characterises each of its subdivision i.e. Transport and communication (T), Trade, Banking and Finance (C) and other services.

b) The widest range is found in the share of the agriculture sector : more than 1 to 4. That in the share of the manufacturing sector is narrower: less than 1 to 3. The narrowest range is the share of the service sector less than 1 to 2. Within the service sector, it is the other services component which includes service activities ranging from professional, personal and business to government, that is responsible for the narrow range of differences. Its share also shows the least regular association with per capita income. These differences are generally variations in responsiveness of the shares of various sectors in the labour force to per capita income. Thus they possibly reflect the response of these shares to the rise in per capita income in the process of modern economic growth.

c) The share of the agriculture sector in national product is also negatively correlated with income per capita. It is low in countries with high per capita income and high in countries with low per capita income. Also as in the labour force, the share of the manufacturing and service sectors in national product are positiviely associated with income per capita.

d) Unlike the shares of the trade and banking and finance and other services divisions in the labour force, which show distinct positive association with per capita income, their shares in national product are about the same in high and in low income countries. The positive association between the share of the total services sector in national product and per capita income is, therefore, chiefly accounted for by the movement of the share of the transport and the communication division whose pattern of association with per capita income is very much like that of the share of the manufacturing sector.

e) Relative product per worker in the agriculture sector is below 1.0 in most countries, i.e. lower than countrywide product per worker: and that in all groups it is lower product per worker in the non-agricultural sectors combined. What is even more interesting, the relative disparity in product per worker between the agriculture sector and the non-agricultural sectors tends to be wider in the low income than in the higher income countries. The underdeveloped countries are further behind the developed countries in product per worker in agriculture than they are in product per worker in the non-agricultural sectors.

f) Product per worker is usually higher in service than in the manufacturing. Furthermore, the difference between the service and manufacturing sectors in product per worker is narrowest in the high income developed countries, and

g) The transport, communication and trade, Banking and Finance division of the service sector is characterised by generally higher levels of product per worker than the other services division, and here again the relative excess is inversely related to income per capita-being lowest in the high income, developed countries and highest in the low income underdeveloped countries.

h) Intersectoral inequality in income per worker is narrowest in the high income, developed countries and rather wide in the low income, underdeveloped countries.

13.5.2 Changes in the various Sectors during Economic Growth

The statistical findings based on the examination of the long-term trends reveal that with minor variation most of the trends observed in a cross-section survey are born out: Economic growth is generally associated with a decline in the share of the agriculture sector both in labour force and income. The share of the manufacturing sector shows a rise in both labour force and national product. However, the rise in the share of the labour force is generally not as that large as was observed in a cross section study of economic growth, long term trends also show a rise in the share of the service sector in the labour force, but its share in national product does not give anv consistant movement.

In most countries a rise in income per worker in the agriculture sector, relative to that in the non-agricultural sectors is observed. This means that the rise in per worker product in the agriculture sector has been even greater that that of the non-agricultural sector. Furthermore, within the on-agricultural part of the economy, the rise in the per worker product in the services sector was more moderate than that in either the manufacturing or the agricultural sector. In respect to the movements of sectoral levels of income per worker, the trends shown by the long-term records are consistent with what we could expect from the cross-section analysis.

13.5.3 Trends Explained

The findings summarised in the previous section and the more detailed evidence available elsewhere needs an explanation. The first relate to the finding that there is a shift away from agriculture during the course of economic growth. Without dealing thoroughly with the wide complex of trends involved and factors underlying them, one may well ask what major forces are there which lead to such a shift. The second is the less familiar finding. This relates to the narrow range of differences in the shares of the service sector in labour force and national income in both types of countries and the corresponding diversity of trends over time in the share of the service sector in the national income. The third is the reasons for, and implications of, the much wider intersectoral inequality in per worker product in under-developed than in developed countries. The explanation of these three findings is given below:

a) **Decline in the share of the Agriculture Sector due to Engel's Law**
The decline in the share of the agriculture sector in labour force and national income has a customary explanation. It is found in the application of the Engel law to processes of income change over time. If real income per worker and hence per capita increases, the demand for products of sectors other than agriculture is likely to rise more than the demand for the products of agriculture. People with higher income spend proportionately less on food as compared to people with low incomes. Hence, in a closed economy, a rise in per capita real income will be accompanied by shifts in the structure of total output from the agriculture sector. This would be true in an open economy also. The shift of total demand will favour a greater share of domestic output for the non-agriculture sectors. Therefore, if the demand shifts away from the agriculture sector, the share of the latter in real income will decline, and so will its share in the labour force unless productivity per unit of labour falls which is unlikely.

b) **Rise in Productivity in agriculture as a pre-condition for industrialisation**
There is, however, another link to this argument also. It has to be with the condition for the rise in product per worker, and hence in per capita product. It is a pre-condition of industrialisation that productivity of labour in agriculture increases sufficiently to feed, at higher per capita levels, a larger proportion of

that in most of the developed countries, product per worker in the agriculture sector increased more than product per worker in the rest of the economy combined. Therefore, one may claim that a marked rise in productivity per worker in agriculture is pre-condition of the industrial revolution for any sizable region in the world. Moreover, any country in which the product per worker in the agriculture sector is low will tie to the land, at low income levels, a large part of the population. Such countries will have little margin for the non-agricultural sector to grow upon. On the other hand, when modern economic growth does occur, it is the combination of the marked rise in productivity of labour in the agriculture sector, with secular limits on the demand for its product that results in such a sharp and uniform reduction of the agriculture sector in the labour force.

13.5.4 Narrow Range of Differences in the Shares of the Service Section in two types of Courses

Several reasons may be adduced to explain the narrow range of differences in the share of the services sector associated with differences in per capita income. First, the products of the service sector are less easily imported and exported than are the commodity products of the agriculture and manufacturing sectors. Some services are, however, embodied in values of commodities, and can easily be exported or imported. But many others: government, professional, personal, retail distribution, and similar services—cannot move across a country's boundaries. The international division of labour thus permits a country to concentrate on either the agriculture or the manufacturing sector, but not to dispense with a sizable minimum of service sector goods that must be produced at home.

Second, the service sector includes a wide variety of miscellaneous activities, some of which may be in larger supply in low income countries than in high and vice-versa. For example, domestic and personal services, religious services, and the like are in larger supply in under-developed countries while the professional, educational, and business services, are in large supply in high income countries.

A third and related factor bears particularly upon the share in the labour force. The pressure of population on land and an increase in the productivity in agriculture in the less developed countries may mean a movement of the surplus labour in agriculture into service activities. Firstly, because some of the services demand little capital and yet provide some modicum of living. For example, peddling, cart transport and personal services of various descriptions. Secondly, the employment of this surplus in the manufacturing sector is inhibited partly by capital scarcity and partly by competition of the manufacturing sector in the more developed countries.

A fourth factor is of particular bearing upon the share of the service sector in national income, we have seen that despite the inclusion of large groups of low-paid activities, the average income per worker in the service sector in the under-developed countries is higher relative to that of the per-worker-income in other sectors, than in the developed countries. This is due to the extremely high relative income of some groups within the service sector of the under-developed countries.

Thus given the heterogeneity of the services sector, and the difficulty in moving its goods across a country's boundaries, it may be that economic growth is not necessarily accompanied through all phases by a rise in the share of the services sector in either labour force or national income. But we have seen that the share in the labour force tends to rise fairly generally. This requires explanation. Why should the growth of an economy be accompanied by such a consistent shift of labour into service activities?

The explanation lies in the increase of productivity in the agriculture and manufacturing sectors. In general, this increase is attained, particularly in the manufacturing sector, by concentration of production in large-scale units. Such concentration in scale and continuity in time require a large volume of ancillary services- transportation, communication, distribution, etc. Furthermore, increasing urbanisation calls for increased government services. The demand for an educated population and labour force increases service activities in education. The generally greater complexity of the economic system requires more supervision by government in the way of legislation, regulation and administration. Thus, over and above any shift in demand by ultimate consumers in favour of services that may occur with a rise in real income per capita, there is perhaps the more important rise in the demand for service activities as a necessary complement to the concentrated and specialised high-level productivity organisation in the agriculture and manufacturing sectors. Given greater demand for the products of the service sector, and a somewhat lesser increase in per worker productivity in many divisions of this sector than in the agriculture and manufacturing sectors, the shift in the labour force toward high proportions in the service sector is easily explained.

13.6 INTER-SECTORAL INEQUALITIES DURING MODERN ECONOMIC GROWTH IN DCs AND LDCs

In the low income, underdeveloped countries, despite the fact that the services includes larger proportions than else where of extremely low-paid occupations, the product per worker for the sector as a whole is appreciably higher than in the other parts of the economy. This means necessarily that in some divisions of the services sector product per worker (including entrepreneurs) must be extremely high relative to the countrywide product per worker. This is true in the commerce division (trade, banking, etc.) and in the professional and government sub-divisions.

13.6.1 Reasons for Higher Labour Productivity in Services Sector

There are two major reasons why product per worker in these selected divisions of the services sector is so much higher relative to the countrywide average in the less developed countries (LDG) than in the more developed countries (DCS). First, the commerce division in the less developed countries is generally dominated by traders, landlords, and money lenders who counstitute a group of entrepreneurs. Under conditions of capital scarcity and economically weak position of the large masses of agricultural cultivators, small handicrafts men and shopkeepers these entrepreneurs enjoy a monopoly position and a great economic advantage that may secure for them returns which may absolutely smaller per head than those in the developed countries but are a much larger multiple of the per worker income for the country as a whole. No such monopoly advantages and superior economic power attach to similar group in the better-organised advanced economies of the developed countries.

Second, among certain occupations in the services sector, particularly the professional, minimum levels of income are required for the adequate purpuit of activity, and these minimum levels are a larger multiple of the country-wide income per capita or per worker in the less developed than in the more developed countries. Since the services sector of the less developed countries includes large groups whose occupation requires substantial minimum levels of absolute income per capita, the very low level of the country-wide income per capita, or per worker means that these groups are quite high in the array by relative income position within the country. Furthermore, the connection between the scarcity advantages of occupations requiring a substantial capital investment in education and training and the high levels of their relative income position is much closer in the under developed than in the developed countries.

It follows that in the process of economic growth the increasing supply of capital, both for material investment and for investment in human beings, means a substantial reduction in the factors just adduced to explain why certain groups within the services sector in the underdeveloped countries secure per worker incomes so much higher than the countrywide average. The increased employment opportunities for large groups of the population, at places in the economy where they can be provided with substantial capital per head, mean a greater rise in the per worker product in

13.6.2 Inequality in the size-Distribution of Income

The wide intersectoral inequality in product per worker in the less developed countries suggests that general inequality in the distribution of income by size in these countries may also be quite wide, perhaps wider than in the developed countries. If the countrywide real income per capita is low, the effects of inequality on the welfare position of the masses of the population whose income is significantly below the average are far more serious in terms of material deprivation than in countries where the average income is higher. To be sure one cannot pass simply and directly from measures of product per worker originating in the various sectors to differences in income received by various groups within the population: income originating includes returns on a assets which do not necessarily accrue to the members of the labour force attached to a given sector. But in all countries compensation of employees and entrepreneurial incomes account for by far the largest proportion of total income originating (or of net product turned out) the ratios usually being about 80 per cent. The proportions of total product that are not distributed (retained as corporate savings or government profits) or are distributed to the small group of pure rentiers usually do not amount to more than a few percentage points of national product. Therefore, the intersectoral inequality in product per worker is highly suggestive of inequality in the distribution of income by size among the individuals and households who comprise a country's population. If this is true, the inference that inequality in the size distribution of income is possibly wider in the under-developed than in the developed areas, and the conclusion that such inequality is reduced in the course of economic growth as suggested by the narrowing of intersectoral inequality in product per worder are both plausible.

Check Your Progress 4

1) Mention the two main reasons which product per worker in same selected divisions of the services sector is higher than nationwide average in the LDCs than in the DCs.

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2) What are the reasons for the inequality in distribution of income by size in developing countries.

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3) Describe the trends in the distributions of income by factor shares and in the size distribution of income.

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13.7 MODERN ECONOMIC GROWTH: OTHER TRENDS IN THE ECONOMIC STRUCTURE

In the previous section, we have seen modern economic growth as a phase characterised by rapid shifts in the industrial structure of product and consequently by rapid shifts in the share of labour attached to various sectors in the economy. If we classify economic units by size and type, then further analysis of modern economic growth can be facilitated by a further analysis of distribution of product. and also allocation of labour among economic units classified according to type and size. For example movement away from agriculture was associated with marked reduction in the share of small own account enterprises in aggregate output and of industrial entrepreneurs and own account workers in the labour force. The intersectoral shifts were also accompanied by growth in the scale of firms and changes in the type of organisation within sectors. For example, in the manufacturing and the trade sector small incorporated firms gave rise to large corporate units.

13.7.1 Changes in Distributional Aspects

The shifts in industrial and type of firm structure of national product and the associated allocation of labour force were quite marked and rapid. However, similar trends in other aspects of economic structure were rather missing or were very moderate.

This was more true in what we may call the distributional aspects of economic structure. For example in the trends of the distribution of income both by factor shares as well as in terms of size distribution of income, relatively mild shifts were observed in developed countries which indicate narrowing of inequalities in these countries in the personal distribution of income.

Similarly, very moderate trends were observed in the allocation of product by use particularly between capital formation and consumption. The gross national capital formation proportions rose from about 10 per cent to 20 per cent and the net from 5 per cent or less to between 10 per cent to 15 per cent. Despite the enormous rise in reproducible capital stock per capita per worker consumption continued to account for the overwhelming proportion of gross and net national product, though the nature of consumption changed according to the charges in industrial structure.

13.7.2 Three Other trends in Modern Economic Growth

Besides the internal structure, modern economic growth was characterised by three other prominent trends. Firstly, the technological revolution in transport and communication facilitated contact among various parts of the world. Secondly, modern economic growth spread sequentially from its pioneer beginning in 18th Century England to various follower countries with the timing of entry continuing even today. Thirdly, until the entry of Japan in the late 19th Century followed by USSR in 1930s modern economic growth was concentrated in European countries and their offshoot overseas, whose per capita income were quite high even before industrialisation and certainly much higher than the incomes of countries in Asia and Africa.

These three features alongwith the high rates of aggregate growth and the shifts in the internal structure led to a variety of associated trends in the internal structure led to a variety of associated trends in the international aspects of modern economic growth process among the developed countries and in their relation to the underdeveloped part of the world. These trends are seen in the international flows of men, goods and capital.

13.7.3 International Flows of Men's Good and Capital

The international flows of men, goods and capital were at high rates from the second quarter of the 19th century to World War I. The migration stream were particularly important for the overseas offshoots of Europe such as North America, Oceania and product rose significantly from 1820 to World War I both in developed countries and the steadily increasing number of UDC drawn into the network of World trade. With minor exceptions upto 1913 a law of increasing share of foreign trade in aggregate product seemed to have operated. Foreign capital investment flows also grew rapidly from the second quarter of the 19th century to World War I.

However, with World War I came a radical change in all the three flows. The effect on international migration was particularly marked and it never recovered to levels of the pre World War I proportions. Almost similar distinguishing effect was noticed in economically oriented international flows of capital funds, i.e. excluding politically motivated grants and donations. Despite continued major improvements in transportation and communication, proportion of foreign trade to aggregate output barely returned to the levels attained on the eve of World War I.

These trends apparently seemed to be the result of the sequential spread, the high rates of aggregate growth and the rapid shifts in internal structure. **The sequential spread** rather than simultaneous emergence meant inequalities in the rate of aggregate growth even among the countries that eventually became developed let alone between all of these and the underdeveloped areas of the world. The high rates of aggregate growth meant that the absolute differences of growth rates even among developed countries were wide and, therefore, commulated rapidly into marked shifts in relative economic and political power among nations.

Check Your Progress 5

1) Why did modern economic growth originate in England?

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2) Do you agree that the spread of modern economic growth has been limited?

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3) What are factors on which the length of the transition period between revolutionary break through and the reaching of thresbold depend?

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13.8 SPREAD OF MODERN ECONOMIC GROWTH

During the course of our earlier discussions it has been pointed out that industrial revolution which provided the base for modern economic growth originated in a small country—Great Britain in the 1780s. This country at that time accounted for only slightly over 1 per cent of the total world population. We have also mentions that this revolution instead of simultaneously occurring in the other countries within the European framework, which had large populations and were better organised than Great Britain, was confined to Great Britain for some decades before it spread to other countries. In the course of our discussions of the rates of growth and changes in the internal structure of economies experiencing modern economic growth, we had also indicated that even after a lapse of almost one and three quarters of a century modern economic growth could reach only about one-third of the total world population. Therefore, the natural question that need to be answered in the context of the spread of modern economic growth is to show if the rate of spread was limited and if so, why?

13.8.1 Was the Spread of Modern Economic Growth Limited?

When we say that the rate of spread is limited, this is not to deny that some elements of modern economic growth have not affected all corners of the globe. What we mean by this statement is that the spread effect has not been enough everywhere—where economic performance in the aggregate has led to a thorough transformation of a country's economic and social framework. For example we cannot say that modern economic growth has not affected India or fer that matter countries in Asia and Africa. But it is a common knowledge that majority of the countries in these regions are still termed as developing.

The question of low rate of spread can be answered if we can show that (i) the pioneering impact of modern economic growth had restricted locus; (ii) the length of the transition period was large which contributed to the slowness of the spread and (iii) the gap between developed and developing countries is widening and is riddled with increasing difficulties. These, are however, questions to which only speculative answers are possible. Nonetheless there are important as only through answers to these questions we can shed light on our main question.

13.8.2 Why did Modern Economic Growth Originate in England?

The question that industrial revolution could have originated only in England is explained with the help of various theories. Chief among them are those that seek to explain the phenomenon in terms of (a) climate, geography and biological factors; (b) historic accidents and (c) through only political factors. Although no one can deny the importance of these factors as explaining the industrial evolution originating in England, these are, however, by no means complete explanations. We shall show that the main pre-conditions for industrialisation were already present in eighteenth century Britain, but what gave it superiority over other countries was that the political and social framework was favourable to vigorous entrepreneurial drives aimed at technological and economic innovation.

England in 18th century was certainly not under-developed by the standards generally applied to the underdeveloped countries of today. By 1780 England did not have subsistence agriculture and hence there were no major obstacles to the transfer of men from non-industrial to industrial pursuits. The country had accumulated and was of sufficient size to permit investment in necessary equipment for economic transformation. Enough of the investable resources were in the hands of men willing to invest in economic progress while relatively little was in the hands of men likely to divert resources to economically less desirable usess. The country possessed an extensive and fairly highly developed manufacturing sector. Transport and communication was fairly easy and cheap. The technological problems of the time were fairly simple. They required no class of men with specialised scientific qualifications; but simply sufficiency of men with ordinary literacy, familiarity with simple mechanical devices and the working of the metal, practical experience and initiative. All this, however, does not mean that there were no obstracles in the path of industrialisation, but only that they were easy to overcome because the fundamental social and economic conditions for it were already present. Great Britain in this sense was a unique case, unmatched by any other European country of the day. If the situation was as indicated above, the industrial revolution could not

Secondly, there were in England inherent compulsions to respond to the major bottlenecks that were emerging within the economic technology of the time. The constraints imposed by the old economic technology were more acute and had reached its limits. For example, while England with its scanty forests and deep mines was under pressure to find a source of fuel and power, Sweden with its abundance of woods, and for that matter Netherlands, which had no wood, coal or iron, faced no such problem. Moreover, it is possible to conceive that such technological opportunities are not likely to be equally available to all countries equipped to exploit them if they are a matter of natural resources, or geographical location or other unequally disributed endowments. Therefore, the beginning of such technological revolutions are likely to have a narrow locus.

So far we have shown that industrial revolution could not have its origin in any other country than England. We now take up the question why it could spread to only a very small proportion of the world population in a period extending over one and a quarter of a century? To answer this question we look into the length of the time involved in the spread of new technology within England to a point where it began to exercise a widely transferring effect on the economy and in the adoption of new technology and the associated institutions by the follower countries.

13.8.3 The Transition Period in the Spread

The length of the transition period from the revolutionary break-through to the time that the threshold is reached depends partly upon the nature of the epochal innovation, partly upon the capacity of the pioneer country or countries to exploit the new opportunities at a high and sustained rate and partly upon the extent of communication and shared antecedents between the pioneer and other would be follower countries.

Historically it is impossible to pinpoint the date at which the outline of the revolutionary transformation of technology and the associated changes in society and economy became apparent. Some of the known facts, however, tell us that:

a) The cummulative effects of the revolutionary technologies in England became evident several decades after 1780s when major innovations associated with the industrial revolution had all been introduced and proved feasible.

b) The spread of iron (later steel) as the basic industrial material and of steam as a source of industrial power took a number of decades, requiring the development of machines for processing metals, as well as several major innovations to extend the use of steam from stationary purposes to its application in transportation, first in inland waters, then to land and finally in the mid nineteenth century to the oceans.

13.8.4 The 'Follower' Countries

Having considered the time span between the beginnings of modern economic growth and the date at which the process of spread may reasonably be expected to begin, we turn to the process of spread itself. For this purpose the follower countries can be distinguished by their distance both geographical and historical and then one may observe the timings of the necessary political and other institutional changes conducive to technological adaptations that were brought about in these countries. This will help in the understanding of how the process of spread got under way for we have seen that for any technological innovation to bear fruit in term of production, society's attitude to such changes must be positive.

If we begin with Western European countries, which shared with Great Britain a long stretch of common history, a number of similar institutions, views and values, we find that in these countries several major institutional and political changes were made either before or during the transition to modern economic growth. But major structural changes cannot proceed at high speed without threatening the unity of a country. Therefore, even among the European countries, nearest and most closely allied historically to pioneering Great Britain, entry into modern economic growth got delayed, until major required political and institutional changes were brought about.

Similarly observations can be made concerning the societies descendents of Western European countries overseas. For example, in USA, the development of the political framework could mature after some decades of its independence. The distinctive transition to modern industrialisation did not begin in the United States until the late 1830s. In other countries, the delay in the formation of an adequate political structure also meant in turn a delay in possible participation in modern economic growth. For example, far reaching political changes could be observed in Australia, Newzealand and Canada between 1850s and 1870 only. It is clear evidence that despite presumably favourable resource supplies, the conditions for effective participation in modern economic growth were not present until well into the second half of the nineteenth century. The delay in establishing a viable political framework was even longer in the case of Argentina (a country with a population overwhelmingly of European stock) despite attainment of political independence early in the nineteenth century.

The conditions in other areas with populations that were overwhelmingly native, inheritors of long distinctive histories, and isolated from Europe, were more pregnant with difficulties and delays. In Africa and some parts of Asia, many of the native societies were not reached by the colonizers from advanced Western powers until later in the nineteenth century. This was partly for technological and partly for political reasons. As a result the economic modernisation in these areas was slow and often late. The effective spread of modern economic growth to these areas began only around middle of the 20th century. In the politically independent countries in Latin America and Africa with large but still traditionally oriented societies, the task of integrating these societies in a widespread and effective process of economic growth was delayed by the political and institutional framework, existing in these societies.

The large states in Asia that remained politically independent particularly China and Japan, are, however, interesting. Aggressive expansion by the developed Western countries in this direction was delayed in part by technological deficiencies of transportation. This explains why significant use of force was not made until the first Opium war with China in 1842 and the Opening of, Japan in 1850s. These dates are three quarters of a century after the initiation of modern economic growth in Great Britain.

Japan responded rather promoptly by reshaping its institutions and entered the process in the 1870s, while China was continuously beset with difficulties in attempting to make the needed structural changes, and consequently its entry in modern economic growth was delayed at least a hundred years.

These are then some of the observations which points unmistakably as to why spread of modern economic growth was limited and slow. The one and three quarter centuries that have elapsed since the Industrial Revolution, at first, seems to be a long period within which such spread could have occurred. But the period becomes all too short if we allow for the time required (1) to bring the revolutionary beginnings to fruition as a new epochal transformation (2) to adjust the ingerited political and social framework, even in European countries and among European descendants (3) to improve the technology of transport and communication that permits the adequate flow of people as well as the expansion by the advanced countries, primarily European, to the previously isolated and economically underdeveloped countries in Asia and Africa, and (4) to bring about a change from the prolonged colonial status of many of these countries. Therefore its hardly surprising and more so if we take into account the observations on the widening gap between the two types of countries as given below that modern economic growth spread to only a very small proportion of the world populations.

The common procedure followed to draw a dividing line between developed and underdeveloped countries has been to set a minimum per capita. The entire analysis then is carried out by analysing if the minimum level of the per unit product of a developed country has risen over the period simultaneously with the growth potential provided by modern technology; and how much of this rise has exceeded the rise in per capita income or per worker product of underdeveloped countries and thus widened the gap between this product and the minimum line of development: The

the minimum per capita. There are enumerable problems in defining that minimum. Without going into these difficulties in detail we answer this question using one alternative framework.

13.8.5 An Alternative Framework for Analysing the Spread

If we define the spread of modern economic growth as the capacity to satisfy some end goals that can be attained by successful exploitation of the potential provided by modern technology we can distinguish between aspiration towards it and its realisation. Some indirect evidence of the gap between the two can then be deduced. Because of the tremendous advance in transportation and communication and the influence of demonstration effects, aspirations have spread much faster than realisation. While aspirations may have always outpaced realisation in all countries, developed and underdeveloped., but the recent increased exposure of the under developed countries to the more advanced countries and their closer contancts have probably produced a wide gap between aspiration and realisation than existed in the presently developed countries in earlier times. Altough we have no evidence to support it, it seems plausible.

13.9 LET US SUM UP

In this unit we have discussed characteristics of modern economic growth. After defining the term modern economic growth we have shown that high rates of growth, rapid shifts in the industrial structure of product and labour force, in the distribution of aggregate product and allocation of labour force among economic units classified by size and type, changes in the distribution of income both by factor incomes and size of households, changes in the allocation of product use—between capital formation and consumption and changes in the international flow of men, goods and capital have been the common characteristics shared by all developed countries. We have also shown (a) how relations largely among these countries but also between them and others led to the spread of modern economic growth; and (b) the common characteristics are inter-related and that the association between the aggregative and internal structure characteristics and the character of its spread and the effects on international relations all stem from a common source called technological revolution. The increased power of technology applied to international transport and communication carried across national boundaries the consequences of rapid shifts in the internal structure of developed nations. It also contributed to the sequential spread because the institutional changes required to provide the proper auspices for economic modernisation are so radical that simultaneous emergence is difficult. The trends observed in the economic structure of developed countries seem to be the result of sequential spread, the high rates of aggregate growth and rapid shifts in the internal structure. The sequential spread rather than simultaneous emergence would mean inequalities in the rates of aggregate developed let alone between all of these and the underdeveloped areas of the world. The high rates of growth would mean that the absolute differences in growth rates among developed countries would be wide and would cumulate rapidly into marked shifts in relative economic and political power among nations. This is what precisely had happened.

We looked at the reasons why Modern Economic Growth originated in England and discussed whether the spread was limited. We also described the coming of modern economic growth in the follower countries.

13.10 KEY WORDS

Per Worker Products : Total product divided by the number of workers.

Innovation : Invention of product or process which has been put to productive, often commercial, use.

Epoch : A particular historical period set off from others on the basis of distinctive characteristics and features.

13.11 SOME USEFUL BOOKS

Hobsbawm, Eric, *Industry and Empire,* Pelican, London

Kuznets, Simon, 1966, *Modern Economic Growth: Rate, Structure, and Spread,* Oxford and IBH Publishing Company, New Delhi.

13.12 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1) Hint: read section 13.2.1 in the text and answer
2) Hint: read section 13.2.2 in the text and answer
3) Hint: read section 13.3.1 in the text and answer

Check Your Progress 2

1) Hint: read section 13.4.1 in the text and answer
2) Hint: read section 13.4.5 in the text and answer
3) Hint: read section 13.4.4 in the text and answer

Check Your Progress 3

1) Hint: read the introductory paragraphs of section 13.5 in the text and answer.
2) Hint: read section 13.5.1 in the text and answer
3) Hint: read section 13.5.3 in the text and answer

Check Your Progress 4

1) Hint: read section 13.6.1 in the text and answer
2) Hint: read section 13.6.2 in the text and answer
3) Hint: read section 13.7.1 in the text and answer

Check Your Progress 5

1) Hint: read section 13.8.2 in the text and answer
2) Hint: read section 13.8.1 in the text and answer
3) Hint: read section 13.8.3 in the text and answer