UNIT 1 INTRODUCTION TO ECONOMIC GROWTH

Structure

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1.0 OBJECTIVES

The goal of this unit is to understand the concept of economic growth and examine how different countries have performed in terms of their growth over the years. After going through the unit you would be able to :

- Define the concept of economic growth;
- Contrast between economic growth and economic development;
- Describe the growth performance of the world economy; and
- Explain the importance of the study of economic growth.

1.1 INTRODUCTION

> *The question of growth is nothing new but a new disguise for an age-old issue, one which has always intrigued and preoccupied economics: the present versus the future*
>
> *- James Tobin*

If you speak to your parents and grandparents about their life when they were young, you will find that your standard of life is much higher than theirs. The material standards of living have substantially improved for most of the people in the last few decades in most countries. This improvement in standard of living has come from rising levels of incomes and which has made it possible for people to consume higher quantities of goods and services as well as they are of better quality.

Economists have always known that growth is an essential ingredient for economic development. Economic growth and change are part of the normal experience of economic life of societies. This course attempts to explain how economic theory can be used to gain better understanding of the process of economic growth and change. Though there are no universal laws which govern the process of economic growth but there are many economies that face a relatively small set of dominating constraints on their process of growth and structural change. While economics by itself cannot offer a satisfactory explanation of either particular historical experiences or some general phenomena, such as technical progress, it can offer valuable insights into the fundamental process of growth in these economies (Chaudhuri, 1989, p 1).

Paul Romer (1996) has tried to explain the process of economic growth using an interesting analogy. In his words, '*Economic growth occurs whenever economic agents take resources and rearrange them in ways that are more valuable. A useful metaphor for production in an economy comes from the kitchen. To create valuable final products, we mix inexpensive ingredients together according to a recipe. The cooking one can do is limited by the supply of ingredients, and most cooking in the economy produces undesirable side effects. If economic growth could be achieved only by doing more and more of the same kind of cooking, we would eventually run out of raw materials and suffer from unacceptable levels of pollution and nuisance. Human history teaches us, however, that economic growth springs from better recipes, not just from more cooking. New recipes generally produce fewer unpleasant side effects and generate more economic value per unit of raw material*'. Each successive generation tends to perceive the limits to growth that finite resources and undesirable side effects would pose if no new recipes or ideas were discovered. But every generation has also underestimated the potential for finding new recipes and ideas. Human beings consistently fail to grasp how many more ideas are yet to be discovered. Possibilities do not add up, they multiply with time and people as they interact.

1.2 WHAT IS ECONOMIC GROWTH?

Today economic growth is everybody's concern and in such a milieu growth process and growth theory has received particular attention of economists and policymakers. Yet surprisingly, there is no universally acceptable definition of the term. Different economists have used the term 'economic growth' to convey different meanings.

In very simple English 'economic growth' occurs whenever people take resources and rearrange them in ways that are more valuable to the society. Economic growth may be defined as a rate of expansion that can move an underdeveloped country from a near subsistence mode of living to substantially higher levels in a comparatively short period of time, i.e. in decades rather than centuries. Historically, rapid economic growth has been accompanied by greater industrialization. But more precisely the process of economic growth can be described in terms of greater commercialisation of economic activities. Though this concept is correct in essence, it lacks precision and makes its measurement difficult.

Economic growth Defined: A simple definition is that it is an increase in the level of output of goods and services that is sustained over a long period of time, measured in terms of value added.

Process of economic growth is essentially a dynamic concept and refers to a continuous expansion in level of output, i.e. it refers to forces that generate a positive rate of change over time and not the forces that lead to discrete (or one shot) change from a lower to higher level of output which are temporary and short lived.

The term output expansion, however, is subject to ambiguity in the sense that does it mean growth in total output or growth in output per capita. An increase in the former is referred to as 'extensive' growth whereas an increase in the latter is called the 'intensive' growth. The latter one is important in the context of increase in the standards of living of the population of the country whereas the former is extremely significant when one wants to examine the aggregative phenomenon such as economies of scale etc (Chaudhuri, 1989, p. 2).

Here distinction needs to be made between level of output and output capacity. Most growth theories implicitly deal with changes in output capacity, whereas actual changes in output over time are influenced by the ability of an economy to utilize the existing capacity effectively. In this context it is important to keep in mind that for a particular economy, growth of output at two points in time may be significantly influenced by different degrees of utilisation of capacity for relevant periods. In the analysis of long term one cannot ignore the effects of the short run completely.

Another important issue in the context of growth process is the incorporation of the changes in the quality that tends to be integrated part of the growth process. Factor as well as commodity markets both are characterised by theses changes. For instance in the commodity markets economic growth leads to not only increased output but also to newer and, many times, better products. In the factor markets economic growth brings improvements in skills of workforce and/or more efficient and/or safer types of machinery. The process of economic growth may also lead to changes in the form of economic activity which referred to as structural shift in the economic structure of an economy. This means that the economy moves away from being largely rural and agriculture based to urban and industry dominated. The most fundamental change by far that economic growth creates is the widening of range of choices that become available to an economy. Economic growth creates the potential for the society to usher in healthier, better educated population and improve the quality of life for its citizens. Here it must be kept in mind that the current state of theories of economic growth is far from adequate in incorporating the qualitative aspects of the phenomenon of economic growth (P. Chaudhuri, 1989, p. 3).

1.3 ECONOMIC GROWTH AND DEVELOPMENT: A CONTRAST

As discussed above, in the recent literature the term *economic growth* refers to increases over time in a country's real output of goods and services. Output is generally measured by gross or net domestic product (GDP or NDP), though other measures can also be employed. The term *economic development*, in contrast, is much more comprehensive. It implies progressive changes in the socio-economic structure of a country. Viewed in this way, economic development involves a steady decline in agriculture's share in the GDP and a corresponding rise in the share on industrial sector as well as of the economic (productive) services. This transformation in the economic structure is invariably accompanied by a shift occupational structure of labour force and an improvement in its skill and productivity.

Compared to the objective of development, economic growth is far easier to realise. This is because process of development is far more pervasive. Apart from a rise in output, it involves changes in the composition of output as well as a shift in the allocation of productive resources so as to ensure social justice.

Many times in the discussions we tend to use growth and development interchangeably. A growth in the real income is supposed to contribute to general rise in the standard of living of the people in general. But growth and development need not be the same. The average per capita income figures are derived by dividing total real income by the population of the country. But it does not say anything about the distribution of income, occupational structure, share of agriculture and industry in economic activity (Ghatak, 2003, p. 23).

Check Your Progress 1

1) What is the definition of Economic Growth?

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2) What is the difference between economic growth and economic development?

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3) How is 'extensive' economic growth different from 'intensive' economic growth?

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4) Which is a better indicator for assessing the growth performance of an economy and why?

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1.4 GROWTH PERFORMANCE OF THE WORLD ECONOMY

From the earliest historical times until around the beginning of the 19th century, the number of people in the world and the volume of goods and services they produced grew at roughly equal and slowly increasing rates. The living standards of ordinary people in the 18th century Europe were about the same as those of people in contemporary China or ancient Rome or of people in the poorest countries in the world today. Then during the last two centuries, both production and population growth accelerated drastically with production growth outpacing the growth in population. It was for the first time in history that living standard of the ordinary people began to undergo sustained growth. This was made possible by the rapid economic growth in the world economy in this period

In 1800, incomes per capita differed by perhaps a factor of two between the richest and poorest nations. It was to explain this difference in income that Adam Smith undertook the task of writing *Wealth of Nations*. Today the difference between the per capita income of the richest and poorest country is about 300 times (see Table 1.1). This gives the indication of how little we know about growth dynamics and much more we need to stress on study of the process of economic growth.

Economic growth in the second half of the twentieth century has been miraculously different from any earlier period in history that our previous generation may find it difficult to believe it. Production in the world as a whole grew at more than 4 per cent per year whereas the population grew at around 2 per cent. The real income of an average person has more than doubled since the World War II

The growth in per capita income has been uneven across countries over the years. Some countries have grown at very fast pace while others have lagged behind. In any given year, one could observe large differences in the standard of living among countries. Table 1.1 shows GDP and GDP per capita in the world's 22 countries across different continents in 1990 and 2000. As we can see from this table that China's has grown at the fastest rate of over 10 per cent per annum in the nineties. India has also grown at a relatively fast pace in this period of around 6 percent. Although India's growth is much slower than that of China's as also the population growth in India's higher than that of China's. Due to this the per capita income has grown at even slower pace in former. The highest per capita are Japan and the U.S. with per capita GDP of US $ 36828 and 35046 respectively.

Table 1.1: GDP and GDP per capita across countries – 1990 and 2000

↓Countries	**G.D.P.** ($ million)	**GDP** per capita ($)	**G.D.P.** ($ million)	**GDP-**per capita ($)	**CARG* GDP**
Year →	**1990**		**2000**		**1990-2000**
Ethiopia	4020.7	78.9	6304	99	4.6
Kenya	8456.6	357.3	10410	347	2.1
Pakistan	42885.2	397.8	61673	447	3.7
India	**267696.7**	**314.9**	**479404**	**472**	**6.0**
China	**405182.0**	**354.9**	**1079954**	**856**	**10.3**
Egypt	62716.6	1194.5	98333	1537	4.6
Iran	69501.4	1272.8	98990	1547	3.6
Tanzania	6865.0	266.1	9316	274	3.1
Namibia	2327.8	1489.9	3479	1740	41
Russia	410642.0	2756.9	251092	1720	-4.8
Brazil	441462.0	2984.2	587553	3456	2.9
South Africa	103271.2	2927.6	125887	2928	2.0
Korea, Republic	262648.2	6172.9	457219	9728	5.7
New Zealand	37192.0	10372.9	49983	12496	3.0
Sweden	190218.8	21996.2	227369	25263	1.8
United Kingdom	1104170.8	19152.4	1413432	23557	2.5
Japan	4110381.3	33349.4	4677099	36828	1.3
France	1086717.2	19169.1	1286252	21801	1.7
Germany	1611434.9	20249.2	1870136	22807	1.5
Australia	263641.8	15633.8	394023	20738	4.1
Canada	518097.4	18461.3	689549	22244	2.9
United States	7074185.8	28263.9	9882842	35046	3.4

Note: CARG* refers to compound annual rate of growth.

Source: *World Bank, World Development Report, 1992, 2002, and 2004.*

In the following table we could see the performance of different countries across different categories: High income and low income countries over last four decades. As we can note from the Table 1.2 here also China has been the best performer in this period followed by South Korea and Taiwan. India is also among the high growth countries in the developing world though not growing as fast due to various reasons. The performance of China and India in the last few years has improved further which gets reflected in the previous table (as discussed earlier). There is no doubt that this performance is far superior to many of the countries in the developing world which have contracted in this period, prominent ones being Congo, Sierra Leone, and Niger.

Table 1.2: The growth of per-capita GDP for high-income industrial countries, high-growth LDCs, and low-growth LDCs, (1980–1999)

High-growth *LDC*s		High-income Countries		Low-growth *LDC*s	
China	8.2	Japan	2.2	Congo (Zaire)	-4.7
South Korea	5.8	Australia	2.1	Sierra Leone	-3.5
Taiwan	5.3	United States	1.9	Niger	-2.5
Singapore	4.8	United Kingdom	1.9	Haiti	-2.2
Thailand	4.7	Italy	1.8	Côte d'lvoire	-2.2
Ireland	4.4	Netherlands	1.8	Zambia	-2.0
Hong Kong	3.9	France	1.6	Madagascar	-1.8
India	3.7	Germany	1.5	Nicaragua	-1.8
Malaysia	3.7	Canada	1.4	Central African Republic	-1.3
Chile	3.6	Switzerland	0.9	Nigeria	-1.1

Source: World Bank, *World Development Indicators, 2001*; and Republic of China, *Statistical Yearbook of the Republic of China, 2000*.
NOTE: Only countries with a population of 2 million or more in 1999 are included.

The Table 1.3 further goes in details of growth performance and examines the level of GDP and GDP per capita for these economies from 1950 to 1998, almost half a century. The subdivision of the periods are 1950, 1973 (first oil-shock period), 1990 (spurt in globalization process), and 1998. These numbers are taken from Maddison (2003). We can see in the Table that South Korea, Japan, and China have experienced the fastest growth in terms of GDP as well as GDP per capita from 1950-1998. This data is not for the latest year as the methodology adopted by Maddison (2003) is different as compared to others such as the World Bank. Therefore, the Tables 1.1 and 1.2 are not comparable.

Table 1.3: GDP and GDP per capita across countries – 1950 and 1998

Countries	**G.D.P.** ($ million)	**pcy***	**G.D.P.** ($ million)	**pcy***	**G.D.P.** ($ million)	**pcy***	**G.D.P. ($ million)**	**pcy***	**CARG-GDP**	**CARG-pcy**
	1950		**1973**		**1990**		**1998**		**1950-1998**	
Ethiopia	5394	250	13640	401	18964	372	24883	400	3.24	0.99
Kenya	3982	653	12107	961	26093	1101	30451	1075	4.33	1.04
Pakistan	25366	643	67828	954	182014	1598	261497	1935	4.98	2.32
India	**222222**	**619**	**494832**	**853**	**1098100**	**1309**	**1702712**	**1746**	**4.33**	**2.18**
China	**239903**	**439**	**740048**	**839**	**2109400**	**1858**	**3873352**	**3117**	**5.97**	**4.17**
Egypt	15224	718	36249	1022	112873	2012	140546	2128	4.74	2.29
Iran	28128	1720	171466	5445	199819	3586	274695	4265	4.86	1.91
Tanzania	3362	378	9007	588	13852	556	16933	553	3.43	0.80
Namibia	1002	2159	2895	3484	4619	3278	6158	3797	3.86	1.18
USSR*	510243	2834	1513070	6058	1987995	6871	1132434	3893	1.67	0.66
Russia			872466	6577	1151040	7762	664495	4523	-0.77	-1.06

Brazil	89340	1672	401643	3882	743765	4924	926919	5459	4.99	2.50
South Africa	34465	2534	102498	4167	147509	3965	165239	3858	3.32	0.88
Korea, Rep	16045	770	96794	2841	373150	8704	564211	12152	7.70	5.92
New Zealand	16136	8493	37177	12518	46729	13825	56322	14822	2.64	1.17
Sweden	47269	6738	109794	13488	151451	17672	165385	18688	2.64	2.15
United Kingdom	347850	6907	675941	12023	944610	16411	1108568	18714	2.44	2.10
Japan	160966	1926	1242932	11334	2321153	18795	2581576	20413	5.95	5.04
France	220492	5270	683965	13123	1026491	18092	1150080	19558	3.50	2.77
Germany	265354	3881	944755	11965	1264438	15925	1460069	17799	3.62	3.22
Australia	61274	7491	172314	12764	291180	17028	382335	20337	3.89	2.10
Canada	102164	7436	312176	13838	524475	18934	622880	20559	3.84	2.14
United States	1455916	9561	3536622	16689	5803200	23214	7394598	27331	3.44	2.21

Source: Maddison, 2003. NOTE: pcy* refers to GDP per capita.

As for the performance of Indian economy is concerned, over the years, it has been growing steadily. The real GDP of India in 2003/04 was Rs. 1567399 crores which is more than 10 times its 1950 level, and the real GDP per person in 2003/04 was Rs. 14607 which is more than 3.5 times what it was in 1950[i] (RBI, 2004[ii]). Compared to the pre-Independence period, it has been impressive performance but as we saw above it is far from satisfactory and well below the best performing economies in our close neighbourhood.

1.5 WHY STUDY THE PROCESS OF ECONOMIC GROWTH?

What is it about the economic growth that we need to spend so much time in studying the economic growth process in details? There could be various reasons for doing so. Some of the important ones are as follows:

1) It enables us to gain a better understanding of an important historical process. For instance we may want to understand

   a) Why Britain was the first country to industrialise? Or

   b) Why even after having the head start Britain has fallen behind the United States, Germany and Japan and, more recently, to many other west European countries?

   c) Why economic growth has been concentrated in the relatively small part of the world economy of Western Europe, North America and parts of Asia?

   d) What were the reasons for rapid economic growth of the East and South East Asian economies for almost three decades and what about China in last two decades – that seems to have outshined all previous growth experiences and showing no signs of slow down?

   Economic theory of growth is essential for answering all these questions though it may not be sufficient. This is because the growth theory has not developed adequately to explain some important phenomenon like technical progress or the welfare consequences of growth.

2) It may also be because the historical experience of each of the economy has some unique characteristics which involve forces some of which may not be possible to duplicate in another economy. Economic theory, in these circumstances, can suggest some hypotheses while rejecting the others, as to

why growth occurs at different rates at different times across countries. In the process it can also identify some strategic variables in the process, such as increases in agricultural productivity, or rate of capital accumulation etc. More on these and related issues will be discussed in the later Units in this course.

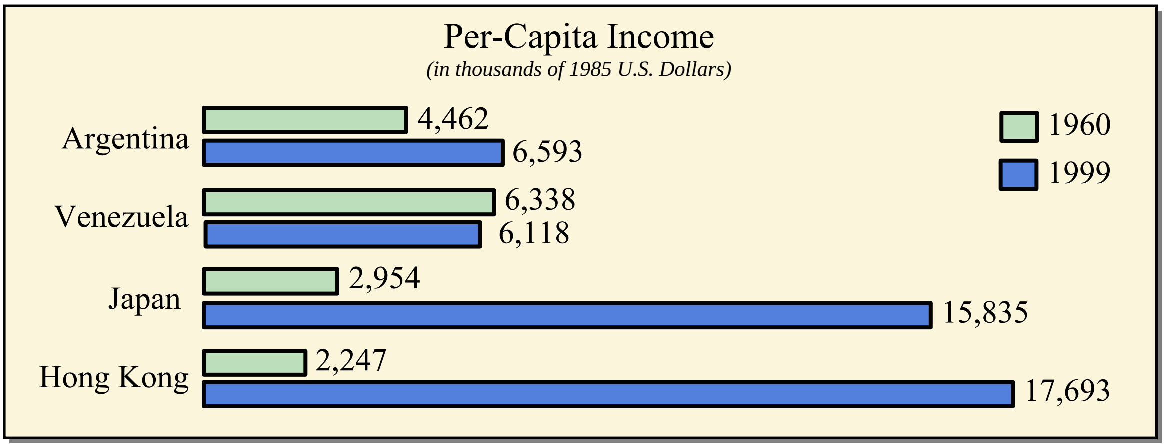
3) It may also be because the historical experience of each of the economy has some unique characteristics which involve forces some of which may not be possible to duplicate in another economy. Economic theory, in these circumstances, can suggest some hypotheses while rejecting the others, as to why growth occurs at different rates at different times across countries. In the process it can also identify some strategic variables in the process, such as increases in agricultural productivity, or rate of capital accumulation etc. More on these and related issues will be discussed in the later Units in this course.

4) Understanding of economic growth process may help *in formation of economic policy*. In the sphere of policy it is not always possible to make a distinction between short and the long run. For instances short run policies to stabilise and economy may have quite different long term ramifications, whether it is exchange rate or monetary or fiscal policies as they have differential impact on the consumption and investment in the economy. One of the reasons why Keynesian policies[iii]: were so popular across the world was that it identified rate of investment as a key policy variable but it proved to be inadequate because it was not able to offer any potential relationships between productivity and real wages.

1.6 THE IMPORTANCE OF ECONOMIC GROWTH

The relationship between wealth resulting from rapid growth and happiness is difficult to establish. As there is no unambiguous evidence that rich are happier than the poor, or that individual grow happier as their incomes increase. In so far as economic growth results from alertness in seeking out and seizing economic opportunities, it is to be expected that it should be associated with less happiness. There is some evidence to suggest that a far higher level of psychological dissatisfaction in the U.S. and Japan – country with one of the highest level of per capita income–than there is in most of the low income economies of Asia and Africa.

Cross country differences in growth rates over a few decades substantially alters relative income. From 1960-1999, per capita income growth in Argentina and Venezuela was 1% and - 0.1% respectively. In the same period, the growth rates of Japan and Hong Kong were at much higher level of 4.4% and 5.4% respectively. Note how the rapid growth rates of the two Asian economies dramatically altered their relative incomes compared to the other two economies.



Source: *Robert Summers and Alan Heston, Penn World Tables*

Besides there are many more advantages of the process of growth. Some of these are listed below:

1) The advantage of economic growth is not that it increases happiness but it creates potential for wider range for human choice (tangible as well as intangible). In other words economic growth gives us freedom to enjoy greater leisure or more material wealth (in form of goods and services) or some combination of the both. In poor countries around 50–70 per cent of population works in agriculture to feed everyone whereas in rich countries less than 10 per cent are enough to do the job. So, in the latter countries there are much larger number of people who are available for other activities (such as medical science, education, scientific research, entertainment etc.). So, economic growth makes it possible to release people from basic task of growing food to more complex and interesting economic activities.

2) Rapid economic growth is one of the important instruments to resolve social tensions which tend to result from different segments of populations trying to extract more and more than already have, e.g. workers asking for higher wages, better housing, education, health and other amenities. If the level of income in the economy is stagnant then desires of one group could be met only at the cost of the other groups which tend to cause social conflicts. Through rapid economic growth this conflict to a very large extent could be avoided. Due to this reason, policymakers and political leaders should need no convincing for the urgency of stimulating growth (Lewis, 1955).

3) What distinguishes humans from the other creatures is that we have greater control over our environment but not that we are happier. So, from this perspective economic growth is desired greatly. There is no doubt that economic growth increases control of humans over their environment and thereby expanding their freedom and horizon. Higher levels of income resulting from rapid economic growth free life from nature' menaces of death and diseases.

4) In the process of economic growth women are likely to benefit far more than the men. In most low income economies, most of the household tasks are done by women and many of these are done by the mechanical devises in the advanced societies – such as grinding grains, washing clothes and dishes, cooking among others. economic growth transfers many of these and many other tasks like spinning and weaving, teaching children, minding the sick to external establishments which are specialized at doing these with the scale advantages. In the process women gains freedom from drudgery and emancipated from seclusion of the household, gains at last the chance for being complete human being exercising her mind and her talents in the same way as men (Lewis,1955).

5) Economic growth also permits mankind to indulge in the luxury of greater humanitarianism as at higher level of income they can afford to forgo part of their income to uplift others who have not been so fortunate (Lewis,1955).

6) Economic growth process has been found to by far the most effective tool to alleviate poverty. There is lot of evidence to suggest that income inequalities tends to worsen at the initial stages as the economy grows but there is very little evidence of worsening of poverty. The best example of this is this is the experience of China, India[iv] and countries of East and South East Asian economies in the past two to three decades characterized by rapid economic growth. In the literature, this effect of growth on poverty is known as the *trickle down effect*. So rising inequalities and lower poverty tend to go hand in hand in the process of economic growth.

This is not exhaustive list but give us some idea about how process of economic growth could benefit a society and correspondingly its citizens.

Check Your Progress 2

1) Describe the broad contours of the growth of nations in the second half of the twentieth century.

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2) What in your opinion would be the main reasons for studying the growth of nations? What useful knowledge can we obtain?

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3) Discuss any three advantages of economic growth.

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1.7 SOURCES OF ECONOMIC GROWTH

Economic growth is a complex process that generally involves several interrelated factors. Economists stress the importance of three major sources of economic progress:

a) investment in physical and human capital,

b) technological advances, and,

c) institutional and policy changes that improve the efficiency of economic organisation.

   i) competitive markets,

   ii) stable prices,

   iii) free trade,

   iv) flexible capital markets,

v) avoidance of high marginal tax rates

vi) secure property rights, and

vii) political stability,

However, here we must remember that in a country's growth process the role of economic factors is crucial and decisive. The *stock of capital* and the *rate of capital accumulation* in most cases settle the question whether at a given point of time a country will grow at what pace. There are few other economic factors which also have some bearing on development but their importance is hardly comparable to that of capital formation.

Capital Formation: More capital generally means more production, and more production means more growth. To get capital, countries have to invest and so the level of investment may be a big determinant of *future* growth. So, Capital formation is of crucial importance in the *process of economic growth*. It is quite necessary to step up the rate of capital formation so that a large capital stock of machines, tools and equipment could be accumulated which can be geared into faster growth in the level of production of goods and services. Not only that, capital formation requires the creation of skill formation so that the physical appearance requires the creation of skill formation so that the physical apparatus or equipment created can be utilised to raise the level of productivity. In the words of Indian Planning Commission "The level of production and the material well-being a community can attain depends, in the main, on the stock of capital at its disposal, i.e. on the amount of land per capita and of productive equipment in the shape of machinery, buildings, tools and implements, factories, locomotives, engines, irrigation facilities, power installations and communications. The larger the stock of capital, the greater tends to be the productivity of labour and, therefore, the volume of commodities and services that can be turned out with same effort" (First Five Year Plan p 13).

Experiences of other countries in other countries suggest that a high rate of capital formation was achieved to trigger rapid economic growth. In Japan, investment rate between 1913 and 1939 averaged 16 to 20 per cent. The First Five Year Plan of the Soviet Union had a target of net investment amounting "between a quarter and a third of national income" though in the subsequent plans the rate of investment was lowered and stabilised at about 20 per cent of national income. In some of the East European countries like Czechoslovakia and Poland, gross investment rates ranged between 20 and 25 per cent.

Capital-Output Ratio: Another determinant of economic growth is the capital-output ratio. The term 'capital-output ratio' refers to the number of units of capital that are required in order to produce one unit of output. In other words, capital-output ratio reflects the productivity of capital in the various sectors of the economy at a point of time. The capital-output ratio for the economy as a whole is only a shorthand description of the *productivity of capital*.

The capital-output ratio is different for different industries and different economies and it varies over a period of time. According to Indian *First Five Year Plan* "There is no unique capital-output ratio applicable to all countries at all times. Much depends on the stage of economic development reached but also on the precise form of further expansion." For instance in the early phase of growth process, when a country is making heavy investment in economic infrastructure, i.e. on building irrigation works, hydro-electric projects, roads, railways, etc. the corresponding additions to output will be small. But with passage of time as the power potential and transport equipment are utilised to the full, there shall be a favourable shift in the capital-output ratio. Similarly, basic industries like iron and steel, machine tools, engineering and metallurgy are more capital-intensive than consumer goods industries. Consequently in the initial years of development when the economic foundations are being laid, capital-output ratio tends to be unfavourable. But as development gathers momentum, and the emphasis is shifted to the production of consumer goods, relatively smaller increases in investment bring about large increments to output. In other words, the stage of growth and the mix of various types of investment determine the capital-output ratio.

Besides, in certain sectors of the economy output can be increased with comparatively small additions to output, while in other sectors, comparatively large additions to capital are called for. For instance, in Japan, between 1885 and 1915, labour productivity in agriculture was doubled by a comparatively small quantum of investment in the form of better seeds, improvements in water supply, control of crop diseases and use of fertilizers. In additions to this, capital-output ratio depends upon the efficiency with which the new types of capital equipments are handled and the quality of managerial and organisational skill becomes available. Co-ordination of the programme of investment so as to develop complementary economic activity simultaneously has a favourable effect on capital-output ratio. In other words, the capacity of the economy to more effectively use the investment at a particular time also affects the capital-output ratio.

The rate of growth of national income in an economy depends upon the rate of investment and the capital-output ratio:

$$\text{i.e.}\quad \textbf{Rate of Growth of GDP} = \frac{\textbf{Investment - Income Ratio}}{\textbf{Capital - Output Ratio}}$$

In other words, to achieve high rate of growth of national output, economy has to operate on two variables, viz

a) to step up the rate of investment; and

b) to generate forces which improve productivity;

Occupational Structure: Another factor which determines and is determined in due course by economic growth process is the occupational structure of the working population. Experience from all over the world suggests that in the process of growth, transfer of working force from primary to secondary and then secondary to tertiary sector of the economy has invariably taken place. For instance between 1870 and 1930, the proportion of work force engaged in agriculture declined from 54 to 23 per cent in U.S.A., from 43 to 25 per cent in France, and 80 to 48 per cent in Japan. It is, therefore essential that as growth proceeds there is an optimum distribution of the work force in different occupations. As this improves the efficient utilisation of labour which will further boost the overall level of productivity of the economy.

Technological Progress: This is perhaps the most widely accepted (and easiest to understand) source of economic growth. This is because technology makes it possible to produce more from the same quantity of resources (or *factors of production*). This boosts the potential level of out put of the economy. The pace of technological change will depend on:

a) the scientific skills of the country

b) the quality of education

c) the amount of GDP devoted to research and development

In the next section we will discuss the limitations of the economic growth in details for your clearer understanding of the underlying process of economic growth to enable you to critically evaluate it.

1.8 LIMITATION OF ECONOMIC GROWTH

The process of economic growth has certain limitations as well. Thus we should not lose sight of these in the blind race of growth as these could have serious social and economic repercussions for the society (as happened in many of the Latin American countries).

1) **Inequality of income** –growth rarely delivers its benefits evenly. So the issue of distribution of the fruits of the growth process becomes first important limitation of process of economic growth. There is evidence to suggest that, al least in the initial stages of development; growth tends to worsen the distribution of income. Although the relationship between growth and distribution is far from settled. There is no doubt that rapid economic growth creates the potential means for alleviating the problem of poverty which affect almost all the developing countries. With adequate state intervention, this potential has been used to significantly reduce the poverty incidence in the economies of East and South East Asian economies as well as China. It is possible to have economic growth without the majority of population being any better off, as the expanded output enriches only a small section of powerful population. But such developments are immoral, and would result in more social conflicts and could undermine the economic policymaking which benefit only a few (Lewis, 1955).

2) **Pollution (and other *negative externalities*)** – the drive for increased output tends to put more and more pressure on the environment and the result will often be increased pollution – air, water, and noise. This may be water or air pollution, but growth also creates significantly increased noise pollution. Traffic growth and increased congestion are prime examples of this.

3) **Loss of non-renewable resources** – the more we want to produce, the more resources we need to do that. The faster we use these resources, the less time they will last. This invariably leads to loss of non-renewable resources like oil, and other minerals, forests etc. It is clear that economic growth, by either increasing the total availability of goods and services, or by increasing the capacity to do so, makes it possible for people to reach higher level of material welfare for some commodities and at present. However, economic growth process may reduces social welfare as sometimes increasing the level of output may lead to relative scarcity of some other resources or same factors for future generations and could make it more difficult for them to maintain the present level of welfare in the times to come.

Check Your Progress 3

1) Discuss the three main sources of economic growth.

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2) Discuss some limitations of economic growth.

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1.9 LET US SUM UP

The importance of economic growth cannot be overstated. Income growth is essential for achieving economic, social, and even political development. In recent years, an enormous amount of talent and effort has been invested in understanding the process of economic growth, making it one of the most dynamic fields in economic analysis.

In this unit the concept of economic growth was discussed in detail. We also understood the difference between the concept of economic growth and development. The unit also elaborated about why we need to study the process of economic and its importance. We also examined the performance of the countries over last five decades. We ended the unit with discussion of limitation of economic growth.

1.10 KEY WORDS

Gross Domestic Product: Measures level of economic activity in an economy's boundaries in a particular time period, normally a year or a quarter.

Income per capita: This is calculated by total *gross domestic product* of a country divided by total population. Per capita income is often used as an indicator of *level of living* and *development.* It, however, can be a biased index because it takes no account of *income distribution.*

Economic growth: A simple definition is that it is an increase in the level of output of goods and services that is sustained over a long period of time, measured in terms of value added.

Extensive growth: This refers to growth in total output level of an economy.

Intensive growth: This refers to growth in per capita output level in an economy.

Trickle-down effect: This effect refers to the negative link between incidence of poverty and the process of economic growth

1.11 SOME USEFUL BOOKS

Ahluwalia, M.S., (1977), "Agricultural Growth and Rural Poverty", *Journal of Development Studies.*

Barro, Robert & Xavier Sal-i-Martin, (2004) *Economic Growth*, Second Edition.

M.I.T. Press, Cambridge, Massachusetts

Ghatak, S. (2003) *Introduction to Development Economics*, , Routledge, London,

Lewis, W. Arthur (1955) *Theory of Economic Growth*, George Allen & Unwin, London,

Lucas Robert E. Jr, (2002) *Lectures on Economic Growth*, Harvard University Press, Cambridge,Massachusetts

Maddison, Aungus (2003) *The World Economy: A Millennial Perspective*, Overseas Press (India) Limited, New Delhi.

1.12 ANSWERS / HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1) See section 1.2 and answer.
2) See section 1.3 and answer.
3) See section 1.3 and answer.
4) See section 1.3 and answer.

Check Your Progress 2

1) See section 1.4 and answer.
2) See section 1.5 and answer.
3) See section 1.6 and answer.

Check Your Progress 2

1) See section 1.7 and answer.
2) See section 1.8 and answer.