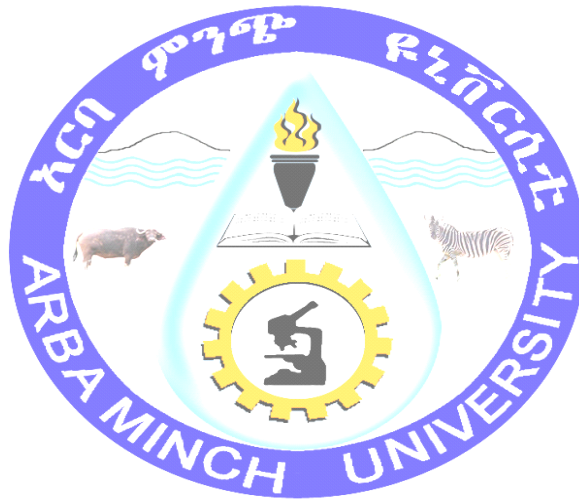


DEVELOPMENT ECONOMICS I

(Econ 3031)



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Preface

The underlying premise of this module is that in order for development to be there, it has to be comprehensive—it has to successfully balance economic goals with social and environmental. “Development” is really much more than simply economic growth. The understanding of development can differ among countries and even among individuals, but it usually goes far beyond the objective of increased average income to include things like freedom, equity, health, education, safe environment, and much more.

You should prepare to discuss and participate in making decisions on the most pressing issues of development, proceeding from their own cherished values and based on reliable data and information from reputable international sources.

This module is designed to introduce you to some major challenges in today’s development (from the global to the national and perhaps even to the local level) and help you gain a more holistic and realistic view of your country’s situation in a global context.

Because development is a comprehensive process involving economic as well as social and environmental changes, this module takes an interdisciplinary approach.

It attempts to explain some complex relationships among various aspects of development, including population growth, economic growth, improvements in education and health, industrialization and post industrialization, environmental degradation. You are invited to explore these relationships even further—using the statistical data and theoretical concepts presented in this module —and to engage in informed discussions of the controversial development issues closest to your hearts.

Chapter I

Concepts and Principles of Development Economics

1. Introduction

Dear learners! this chapter is an introduction to the course development economics. Development economics deals with development problems of developing countries. In other words, it is about the causes and cures of mass poverty in the less developed nations. At the outset, therefore, we should be aware of the relevant concepts and measuring methods of development devised by different institutions and persons. Thus, the discussion of the historical evolution of the concept development and the methods employed in measuring development are vital.

Chapter Objectives

After successful completion of this unit, you will be able to:

- ☛ Understand the meaning of development as distinguished from economic growth,
- ☛ Make clear why universities and academicians need to have a separate subject, i.e. development economics, and why the world is giving an attention to the development problems of developing countries, and
- ☛ Identify different methods of measurement of development and discuss their advantages and disadvantages.

1.1 Definition of Development Economics

Dear learner, what does it mean by Development? (Use the space left below to write your response)

Dear learners! The following story might give you an insight about development

☛ *After reading the story discuss the concept of development in the class*

Becky's world

Becky, who is 10 years old, lives with her parents and an older brother Sam in a suburban town in America's Midwest. Becky's father works in a firm specializing in property law. Depending on the firm's profits, his annual income varies somewhat, but is rarely below 145,000 US dollars (\$145,000). Becky's parents met at college. For a few years her mother worked in publishing, but when Sam was born she decided to concentrate on raising a family. Now that both Becky and Sam attend school, she does voluntary work in local education. The family lives in a two-storey house. It has four bedrooms, two bathrooms upstairs and a toilet downstairs, a large drawing-cum-dining room, a modern kitchen, and a family room in the basement. There is a plot of land at the rear – the backyard – which the family uses for leisure activities.

Although their property is partially mortgaged, Becky's parents own stocks and bonds and have a saving account in the local branch of a national bank. Becky's father and his firm jointly contribute to his retirement pension. He also makes monthly payments into a scheme with the bank that will cover college education for Becky and Sam. The family's assets and their lives are insured. Becky's parents often remark that, because federal taxes are high, they have to be careful with money; and they are. Nevertheless, they own two cars; the children attend camp each summer; and the family take a vacation together once camp is over. Becky's parents also remark that her generation will be much more prosperous than theirs.

Becky wants to save the environment and insists on biking to school. Her ambition is to become a doctor.

Desta's world

Desta, who is about 10 years old, lives with her parents and five siblings in a village in subtropical, southwest Ethiopia. The family lives in a two-room, grass-roofed mud hut. Desta's father grows maize and teff (a staple cereal unique to Ethiopia) on half a hectare of land that the government has awarded him. Desta's older brother helps him to farm the land and care for the household's livestock, which consist of a cow, a goat, and a few chickens. The small quantity of teff produced is sold so as to raise cash income, but the maize is in large measure consumed by the household as a staple.

Desta's mother works a small plot next to their cottage, growing cabbage, onions, and enset (a year-round root crop that also serves as a staple). In order to supplement their household income, she brews a local drink made from maize. As she is also responsible for cooking, cleaning, and minding the infants, her work day usually lasts 14 hours. Despite the long hours, it wouldn't be possible for her to complete the tasks on her own. (As the ingredients are all raw, cooking alone

takes 5 hours or more.) So Desta and her older sister help their mother with household chores and mind their younger siblings. Although a younger brother does not attend the local school, Desta nor her older sister has ever been enrolled there. Her parents can neither read nor write, but they are numerate.

Desta's home has no electricity or running water. Around where they live, sources of water, land for grazing cattle, and the woodlands are communal property. They are shared by people in Desta's village; but the villagers don't allow outsiders to make use of them. Each day Desta's mother and the girls fetch water, collect fuel wood, and pick berries and herbs from the local commons. Desta's mother frequently complains that the time and effort needed to collect their daily needs has increased over the years.

There is no financial institution nearby to offer either credit or insurance. As funerals are expensive occasions, Desta's father long ago joined a community insurance scheme (*iddir*) to which he contributes monthly. When Desta's father purchased the cow they now own, he used the entire cash he had accumulated and stored at home, but had to supplement that with funds borrowed from kinfolk, with a promise to repay the debt when he had the ability to do so. In turn, when they are in need, his kinfolk come to him for a loan, which he supplies if he is able to. Desta's father says that such patterns of reciprocity he and those close to him practice are part of their culture. He says also that his sons are his main assets, as they are the ones who will look after him and Desta's mother in their old age.

Economic statisticians estimate that, adjusting for differences in the cost of living between Ethiopia and the United States (US), Desta's family income is about \$5,500 per year, of which \$1,100 are attributable to the products they draw from the local commons. However, as rainfall varies from year to year, Desta's family income fluctuates widely. In bad years, the grain they store at home gets depleted well before the next harvest. Food is then so scarce that they all grow weaker, the younger children especially so. It is only after harvest that they regain their weight and strength. Periodic hunger and illnesses have meant that Desta and her siblings are somewhat stunted. Over the years Desta's parents have lost two children in their infancy, stricken by malaria in one case and diarrhea in the other. There have also been several miscarriages.

Desta knows that she will be married (in all likelihood to a farmer, like her father) five years from now and will then live on her husband's land in a neighboring village. She expects her life to be similar to that of her mother.

Source: P. Dasgupta (2007), Economics a very short Introduction.

Dear learner, what new ideas did you come up with the concept of Development after reading the above story? (Use the space left below to write your response)

The Concept of Development

It is somewhat easier to say which countries are richer and which are poorer. But indicators of wealth, which reflect the quantity of resources available to a society, provide no information about the allocation of those resources—for instance, about more or less equitable distribution of income among social groups, about the shares of resources used to provide free health and education services, and about the effects of production and consumption on people's environment.

Thus it is no wonder that countries with similar average incomes can differ substantially when it comes to people's **quality of life**: access to education and health care, employment opportunities, availability of clean air and safe drinking water, the threat of crime, and so on. With that in mind, how do we define economic development?

Development is an elusive term. The concept has been understood differently in different time periods and by different persons. Its meaning has evolved progressively to have the present meaning. In the **1950s** and **1960s**, for example, development was considered as synonymous to economic growth. Accordingly, in this period, it has been defined as the capacity of the economy to generate and sustain fast growth rate of GDP (per capital income).

Others tried to explain development in terms of the process of structural transformation of the economy. In this regard, development is the planned alteration of the structure of production and employment so that agriculture's share of both declines and that of the manufacturing and service industries increases.

Later on concerns are accorded to poverty, unemployment, inequalities of income, and other economic, institutional, social and political factors owing to the failure of developing countries to improve the standard of living of the poor. Many developing countries experienced relatively

high rates of growth of per capita income during the 1960s and 1970s. But the countries showed little or no improvement or even an actual decline in employment, equality, and the real income of the poorest part of their population. Consequently, in addition to economic growth, **Dudley Seers** argues on the need of looking on what has been happening to poverty, unemployment, and inequality as a determinant of development rather than mere growth of per capita income.

Development is further broadened still after **Seers**. The phenomenon of development is not merely a question of even the quantitative measurements of income, employment, and inequality. In addition to these issues, development has to incorporate other economic and non-economic factors. A concept of development in general is required which embraces the major economic and social objectives and values that societies strive for.

Presently, therefore, **Todaro** succinctly puts the definition of development as follows: development is “conceived as a multi dimensional process involving major changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality (and unemployment), and the eradication of absolute poverty”.

Denis Goulet distinguishes **three basic components or core values** in this wider meaning of development, which he calls life-sustenance, self-esteem and freedom. All three of these core components are interrelated and are shortly discussed below.

Life-sustenance (the Ability to Meet Basic Needs): life-sustenance is concerned with the provision of basic needs. All people have certain basic needs without which life would be impossible. These life-sustaining basic human needs include food, shelter, health, and protection. No country can be regarded as fully developed if it cannot provide its entire people with such basic needs as housing, clothing, food and minimum education. A major objective of development must be to raise people out of primary poverty and to provide basic needs simultaneously without which there is absolute under development. Hence, economic development is a necessary condition (but not sufficient condition) for the improvement of the quality of life in providing these life sustenance needs and bringing development.

Self-Esteem: self-esteem is concerned with the feeling of self-respect and independence. It means to be a person, a sense of worth and self-respect, of not being used as a tool by others for

their own ends. All peoples and societies seek some basic form of self-esteem. The nature and form of this self-esteem may vary from society to society and from culture to culture. They may call it authenticity, identity, dignity, respect, honor, or recognition. Without development the pride of the peoples of the developing countries on their cultural identity and dignity are being eroded.

No country can be regarded as fully developed if it is exploited by others and does not have the power and influence to conduct relations on equal terms. Now days, economic wealth and technological power have become almost universal measures of worth. Developing countries seek development for self-esteem; to eradicate the feeling of dominance and dependence which is associated with inferior economic status.

Freedom from servitude (To Be Able to Choose): Freedom is ability of people to determine their destiny. It involves an expanded range of choices for societies and their members together with a minimization of external constraints in the pursuit of development. No man is free if s/he cannot choose; if s/he is imprisoned by living on the margin of subsistence with no education and no skills.

Amartya Sen wrote “development as freedom.” **W. Arthur Lewis** stressed the relationship between economic growth and freedom from servitude when he concluded that “the advantage of economic growth is not that wealth increases happiness, but that it increases the range of human choice.” Wealth can enable people to gain greater control over nature and the physical environment (e.g., through the production of food, clothing, and shelter) than they would have if they remained poor. It also gives them the freedom to choose greater leisure, to have more goods and services, or to deny the importance of these material wants and choose to live a life of spiritual contemplation. The concept of human freedom should also encompass various components of political freedom, including, but not limited to, personal security, the rule of law, freedom of expression, political participation, and equality of opportunity.

Economic prosperity expands the range of choices that people may have. It enables to gain greater control over nature and physical environment. It gives the freedom to choose greater leisure, to have more goods and services or deny material wants.

Therefore, development is hardly possible without growth, but growth is possible without development. A country may produce more of some types of its goods and services. However, the benefits of this growth may exclusively be appropriated by a privileged elite and small middle class. In this case the vast majority of the country's people may be completely unaffected or worsened. For instance, the growth attained in the past in countries such as South Africa, Brazil, and the oil rich countries was largely without development.

However, growth without development is not sustainable. In the oil rich countries, for example, their economies grow when price of oil increases. Nevertheless, this growth is not sustainable, as prices cannot be increased indefinitely. Development, on the other hand, is sustainable because it is a change in the structural and institutional factors, social attitudes and customs accompanied with a secular rise in real income through a change in output and occupational structure and improvement in the relative contribution of inputs.

Dear learners, what are three basic components or core values of development?

(Use the space left below to write your response)

1.2 Current interest in development economics

Dear learners! Why do we need to study development economics as a separate subject?

(Use the space left below to write your response)

The focus of the world to the development problems of under developed countries have started recently. Though the study of economic development in general has attracted the attention of economist's right from the mercantilist school, classical school down to Marx and Keynes, its study as a separate subject is a relatively recent phenomenon. It is also after the end of the II world War that the majority of the international bodies with the aim of promoting development

that exist today such as the World Bank and its affiliates, and agencies of the UN all have been established.

Before the war, there was little preoccupation with the economic and social problems of developing countries with which we are concerned today. One of the reasons for this little preoccupation may be that the poor countries were colonies. Moreover, the concern and attention of most people might be focused on depression and unemployment in the developed countries.

The situation today is different. The development of underdeveloped countries and primarily the eradication of absolute poverty are now regarded as one of the greatest social and economic challenges facing humankind. A number of factors can be pointed out that account for this change in attitude and upsurge of interests in the economics of development and the economies of poor nations. These factors can broadly be classified into three: -

- I. Academic interest in development
- II. The awareness of developing countries about their backwardness and their demand for a new international economic order
- III. The awareness of the world in general and developed countries in particular about the mutual interdependence of the world economy

I. Academic interest in development

Academic interest in the mechanics of growth and development is a renewed interest rather than a new preoccupation of economists. The progress and material well-being of human being and nations have traditionally been at the center of economic writings and enquiry starting from the classical economists. Adam Smith, David Ricardo, Thomas Malthus, John Stuart Mill and Karl Marx all dealt at some length with the causes and consequences of economic advances.

Beyond the classical school, economic development theory traces its antecedents to the physiocrats who have generally been considered as the first scientific school of economics. From the 16th to the 18th century European economic thought and practice had been dominated by the Mercantilists. the Mercantilists believed that manufacturing and trade rather than agriculture constituted the basis of a nation's strength. Physiocratic theory was a reaction against the ideas of

the Mercantilists. According to them, agriculture was the source of all wealth since they believed that agriculture alone-generated net surplus over the cost of production while industry merely broke even and trade is considered even as sterile.

The classical school, in the 18th and 19th countries, focused their attention on the analysis of long-run economic growth. They studied the causes of economic growth and its effects on other macro-economic variables as well as the constraints on sustainable growth in the long run. They believed that although both agriculture and manufacturing can bring about growth in output and labor productivity, manufacturing has a greater capacity for increase in labor productivity.

The process of economic growth starts from the extension of market, specialization and division of labor which leads to increase in labor productivity, accumulation of capital and its investments by the capitalists, shift of labor form unproductive to productive activity, and hence enhanced national income. However, most of the classical economists were pessimist about sustainable economic development. They assumed that a country will reach at a stationary state where growth is no longer possible in the system due to population growth and the law of diminishing return.

Yet, this gloomy assumption would seem to be unfounded. Population growth and diminishing returns have not been uniformly depressive to the extent that Ricardo and Malthus supposed. The classical development economists greatly underestimated the beneficial role of technical progress and international trade in the process of economic development.

Development also represents a challenge much more complicated than that of depression and mass unemployment like that of the 1930s. Since the pace of development is affected by both economic and non-economic factors, most of the traditional economic theories (micro and macro economics) faced problems in solving development problems of poor countries. For example, micro-economic theory which is used to solve problems such as equilibrium price, efficient production; distribution of income, resources allocation, etc... faces problems in solving economic development problems. This is because economic development is influenced by factors like economic forces, political conditions, social and institutional factors which many of them are not dealt with in micro economic theory.

Similarly, macroeconomic theories, which are developed on the background of economies of developed countries, fall short of solving the problems of development. The non-economic factors, which are essential components of development problems of the underdeveloped countries, are not incorporated. Moreover, macro-economic theory deals with comparative static economies while development is a dynamic process which is a continuous process of change.

All these factors have led to a resurgence of academic interest in the growth and development process of poor nations. Therefore, as the conventional economic theories could not explain the development problems of these countries, economists required recently a separate subject that deals with this issue.

As part of the academic interest an introductory course in development economics should help students gain a better understanding of a number of critical questions about the economies of developing nations. The following are a sample list of such questions. They illustrate the kinds of issues faced by almost every developing nation and, indeed, every development economist.

- ☛ What is the real meaning of development, and how can different economic concepts and theories contribute to a better understanding of the development process?
- ☛ What can be learned from the historical record of economic progress in the now developed world? Are the initial conditions similar or different for contemporary LDCs from what the developed countries faced on the eve of their industrialization?
- ☛ How can the extremes between rich and poor be so very great?
- ☛ What are the sources of national and international economic growth? Who benefits from such growth and why? Why do some countries make rapid progress toward development while many others remain poor?
- ☛ What are the causes of extreme poverty, and what policies have been most effective for improving the lives of the poorest of the poor?
- ☛ Why is there so much unemployment and underemployment in the developing world, especially in the cities, and why do people continue to migrate to the cities from rural areas even when their chances of finding a conventional job are very slim?
- ☛ Do educational systems in LDCs really promote economic development, or are they simply a mechanism to enable certain select groups or classes of people to maintain positions of wealth, power, and influence?

- ☛ What do we mean by “environmentally sustainable development”? Are there serious economic costs of pursuing sustainable development as opposed to simple output growth, and who bears the major responsibility for global environmental damage—the rich North or the poor south?
- ☛ What is the role of financial and fiscal policy in promoting development? Do large military expenditures stimulate or retard economic growth?

II. The New International Economic Order

There is another major factor accounting for the upsurge of interest in the growth and development process of the developing countries. This has been the poor nations' own increased awareness of their inferior economic and political status in the World. For this reason, these countries desired strongly for material improvement and greater political recognition through economic strength. Countries are becoming more aware of their economic status. International comparisons are being made by organizations like World Bank and UNDP in their Annual Reports. Development is, therefore, wanted to provide people with the basic necessities of life, for their own sake and to provide a degree of self-esteem which are precluded by poverty.

The developing countries have also called for a fairer deal from the functioning of the world economy. The developing countries view the present arrangement with some justifications, as biased in favor of countries that are already rich. The official call for the establishment of a new international economic order would be based on equity, sovereign equality, common interest and cooperation among all states, irrespective of their economic and social system. It is aimed at correcting inequalities and to redress existing injustices; make it possible to eliminate the widening gap between the developed and the developing countries. It is to ensure steadily accelerating economic and social development, and peace and justice for present and future generations.

III. The Mutual Interdependence of the World Economy

The third major factor responsible for the growing interest and concern with the development of the third world has been the increasing awareness particularly on the part of developed countries that dependence is not one way. Previously, it was believed that the relationship between

developing and developed countries is one way i.e. developing countries depend on developed countries. Today the situation is changing.

The rich countries have been compelled out of economic and political necessity to rethink their economic relations with the poorer nations of the world. On the political front, when the world was divided between east and west it forced the western capitalist and eastern communist countries to compete financially and technically for getting the favor of larger part of the third world. On the economic front, the fortunes of all countries, rich and poor are locked together by trade and balance of payments. There exists interdependence in the world economy such that the malfunctioning of one set of economies impairs the functioning of the others.

Therefore, it is not only a moral issue for greater efforts to raise the living standards of the third world countries. It is also purely practical case to be the interest of the developed countries themselves. The ability of poor countries to sustain their growth and development means a greater demand for the goods and services of developed countries.

Gradually, the mutual interdependence of the relationship between developed countries and developing countries has been realized. Developed countries depend on developing countries in a number of ways. These include: -

- ❖ Big market for the products of developed countries which generates output and employment directly, and also help to maintain the balance of payment stability of these countries
- ❖ Cheap source of labor and raw material
- ❖ Source of energy

1.3 The nature of development economics

Traditional Economics is concerned primarily with the **efficient**, least-cost allocation of scarce productive resource and with the optimal growth of these resources over time so as to produce an ever-expanding range of goods and services. By traditional economics we simply mean the Neoclassical Economics taught in introductory textbooks. Traditional neoclassical economics

deals with an advanced capitalist world of perfect markets; consumer sovereignty; automatic price adjustments; decisions made on the basis of marginal, private-profit, and utility calculations; and equilibrium outcomes in all product and resource markets. It assumes economic “rationality” and a purely materialistic, individualistic, self-interested orientation toward economic decision making.

Political Economy goes beyond traditional economics to study, among other things, the social and institutional processes through which certain groups of economic and political elites influence the allocation of scarce productive resources now and in the future, either for their own benefit exclusively or for that of the larger population as well. Political economy is therefore concerned with the relationship between politics and economics, with a special emphasis on the role of power in economic decision making.

Development Economics has an even greater scope. In addition to being concerned with the efficient allocation of existing scarce (or idle) productive resources and with their sustained growth over time, it must also deal with the **economic, social, political, and institutional mechanisms**, both public and private, necessary to bring about rapid (at least by historical standards) and large-scale improvements in levels of living for the peoples of Africa, Asia, Latin America, and the formerly socialist transition economies. Unlike the More Developed Countries (MDCs), in the Less Developed Countries (LDCs), most commodity and resource markets are highly imperfect, consumers and producers have limited information, major structural changes are taking place in both the society and the economy, the potential for multiple equilibrium rather than a single equilibrium are common, and disequilibrium situations often prevail (prices do not equate supply and demand).

In many cases, economic calculations are dominated by political and social priorities such as unifying the nation, replacing foreign advisers with local decision makers, resolving tribal or ethnic conflicts, or preserving religious and cultural traditions. At each individual level, family, clan, religious, or tribal considerations may take precedence over private, self-interested utility or profit-maximizing calculations.

Thus development economics, to a greater extent than traditional neoclassical economics or even political economy, must be **concerned with the economic, cultural, and political**

requirements for effecting rapid structural and institutional transformations of entire societies in a manner that will most efficiently bring the fruits of economic progress to the broadest segments of their populations. It must focus on the mechanisms that keep families, regions, and even entire nations in poverty traps and on the most effective strategies for breaking out of these traps. Consequently, a larger government role and some degree of coordinated economic decision making directed toward transforming the economy are usually viewed as essential components of development economics.

Because of the **heterogeneity** of the developing world and the complexity of the development process, development economics must be eclectic, attempting to combine relevant concepts and theories from traditional economic analysis along with new models and broader multidisciplinary approaches derived from studying the historical and contemporary development experience of Africa, Asia, and Latin America. Development economics is a field on the crest of a breaking wave, with new theories and new data constantly emerging.

1.4 Terminology: the developing world

Dear learner! How do you define the developing world? (Use the space left below to write your response)

Defining the Developing World

The most common way to define the developing world is by per capita income. Several international agencies, including the Organization for Economic Cooperation and Development (OECD) and the United Nations, offer classifications of countries by their economic status, but the best-known system is that of the International Bank for Reconstruction and Development (IBRD), more commonly known as the World Bank. In the World Bank's classification system, 208 Economies with a population of at least 30,000 are ranked by their levels of Gross National Income (GNI) per capita. These economies are then classified as low-income countries (LICs),

lower-middle- income countries (LMCs), upper-middle-income countries (UMCs), high-income OECD countries, and other high-income countries.

Generally speaking, the developing countries are those with low, lower-middle, or upper-middle incomes. Low-income countries are defined by the World Bank as having a per capita gross national income in 2005 of \$875 or less; lower-middle-income countries have incomes between \$3,466 and \$10,725; and high-income countries have incomes of \$10,726 or more. Note that a few of the countries grouped as “other high-income” economies in are sometimes classified as developing countries. For example, high -income countries that have one or two highly developed export sectors but in which significant parts of the population remain relatively uneducated or in poor health for the country’s income level may be viewed as still developing. Examples may include oil exporters such as Kuwait, Qatar, and the United Arab Emirates. Upper-income economies also include some tourism-dependent islands with lingering development problems. Even a few of the high-income OECD member countries, notably Portugal and Greece, have been viewed as developing countries at least until recently.

Nevertheless, the characterization of the developing world as sub-Saharan Africa, North Africa and the Middle East, Asia except for Japan and perhaps three or four other high-income economies, Latin America and the Caribbean, and the “transition” countries of eastern Europe and Central Asia including the former Soviet Union, remains a useful generalization. In contrast, the developed world constituting the core of the OECD is comprised of the countries of Western Europe, North America, Japan, Australia, and New Zealand.

Sometimes a special distinction is made among upper- middle-income or newly high-income economies, designating some that have achieved relatively advanced manufacturing sectors as Newly Industrializing Countries (NICs). Yet another way to classify the nations of the developing world is through their degree of international indebtedness; the World Bank has classified countries as severely indebted, moderately indebted, and less indebted. Finally, the United Nations Development program (UNDP) classifies Countries according to their level of human development, including health and education attainments.

The simple division of the world into developed and developing countries is often useful for analytical and policy purposes. However, the wide income range of the latter serves as an early

warning for us not to over generalize. Indeed, the economic differences between low- income countries in sub- Saharan Africa and South Asia and between upper-middle-income countries in East Asia and Latin America can be every bit as profound as those between high-income OECD and upper-middle-income developing countries.

1.5 The meaning of economic growth and development

More often in economic textbooks, growth and development are used synonymously, and this usage is widely acceptable. However, in particular, the two terms have been defined by different economists differently;

Dear learners! As we have discussed above, development is an elusive term. To some economists, economic development refers to the process of expansion of backward economies, while economic growth relates to that of advanced economies. In fact the term 'development ' and 'growth' have nothing to do with the type of economy. The distinction between the two relates to the **nature** and **causes of** change.

1.5.1 The meaning of economic development versus economic growth

Schumpeter makes the distinction clearer when he defined development as *“a discontinuous and spontaneous change in the stationary state which forever alters and displaces the equilibrium state previously existing; while growth is a gradual and steady change in the long run which comes about by a gradual increase in the rate of savings and population”*.

This view of **Schumpeter** has been widely accepted and elaborated by the majority of economists. According to **Kindleberger**, *“Economic growth means more output, while economic development implies both more output and changes in the technical and institutional arrangement by which it is produced and distributed. Growth may well involve not only more output derived from greater amounts but also greater efficiency, i.e., an increase in output per unit of input. Development goes beyond this to imply changes in the composition of output and in the allocation of inputs by sectors.”*

By analogy with human beings to stress growth involves focusing on height and weight, while to emphasize development, draws attention to the change in functional capacity in physical

coordination. For example, growth without development-more and more steel in the Soviet Union or more and more coffee in Brazil-leads nowhere. It is virtually impossible to contemplate development without growth because change in function requires a change in size. Until an economy can produce a margin above its food, through growth, it will be unable to allocate a portion of its resources to other types of activity".

To some, economic development is the outcome of conscious and deliberate efforts involved in planning. Economic growth, on the other hand, signifies the progress of an economy under the stimulus of certain favorable circumstances, e.g., the progress achieved by the United Kingdom during the Industrial Revolution.

In his simple words, **A. Maddison** says, "The raising of income levels is generally called economic growth in rich countries and in poor ones it is called economic development". **Mrs. Hicks** has also expressed almost the same views and said that economic development refers to the problems of underdeveloped countries and economic growth to those of advanced countries she points out that the problems of underdeveloped countries are concerned with development of unused resources, even though their uses are well-known; while those of advanced countries are related to growth, most of their resources being already known and developed to a considerable extent.

According to **Mehta**, however, the term "growth" has quantitative significance. Growth suggests an increase in the quantity or volume of something. An increase in a country's population, national income; per capita income, consumption, saving, investment, foreign trade etc. over a period, all imply growth. In economics, however, growth strictly means an increase in real income, gross and per capita. On the other hand, development is a process of expansion, fulfilling the desire to have an increase in national income.

1.5.2 The meaning of development and the challenge of development economics

Economic development is a process whereby an economy's real national income as well as per capita income increases over a long period of time. Here, the process implies the impact of certain forces which operate over a long period and embody changes in dynamic elements. It contains changes in resource supplies, in the rate of capital formation, in demographic

composition, in technology, skills and efficiency, in institutional and organizational set-up. It also implies respective changes in the structure of demand for goods, in the level and pattern of income distribution, in size and composition of population, in consumption habits and living standards, and in the pattern of social relationships and religious dogmas, ideas and institutions. In short, economic development is a process consisting of a long chain of inter-related changes in fundamental factors of supply and in the structure of demand, leading to a rise in the net national product of a country in the long run.

Definitions of Economic Development

The term 'economic development' is generally used in many other synonymous terms such as economic growth, economic welfare, secular change, social justice and economic progress. As such, it is not easy to give any precise and clear definition of economic development. But in view of its scientific study and its popularity, a working definition of the term seems to be quite essential.

Economic development, as it is now generally understood, includes the development of agriculture, industry, trade, transport, means of irrigation, power resources, etc. It, thus, indicates a process of development. The sectoral improvement is the part of the process of development which refers to the economic development. Broadly speaking, economic development has been defined in different ways and as such it is difficult to locate any single definition which may be regarded entirely satisfactory.

According to Prof. Meier and Baldwin; "Economic development is a process whereby an economy's real national income increases over a long period of time". This definition explains three ingredients of economic development. a) Process: b) real national income: c) long period. The discussion of these three factors would help in understanding the concept of economic development.

a) *Process*

The term 'process' here refers to the operation of certain forces which bring about changes in certain variables. Various types of economic changes take place during the development process. The most important of these changes can be broadly divided into two categories;

- i) **Changes in the supply of fundamental factors, and**
- ii) **Changes in the structure of demand for the products.**

Changes in factor supply take place due to discovery of additional resources, capital accumulation, population growth, adoption of better techniques of production and institutional changes. Again, changes in the structure of demand for products take place due to changes in the size and composition of the people, changes in the level and distribution of income, changes in tastes etc. Hence economic development may be defined as development of factor, supplies and product demand. These changes bring about an increase in real national income over a long period.

b) Real National Income

Other things being equal, there is a positive correlation between the real national income and economic development. Higher real national income of a country is considered an index of higher economic development and vice versa. In brief, we can say that the real national income is the measuring rod of economic development. Though it may be an imperfect method for measuring development, it is, however, used for global development comparisons. Here emphasis is on the word "real" which signifies that purchasing power of national income should be taken into account for quantifying development. In other words, the money national income is to be discounted by the price index, as shown by the formula below:

$$Y_r = Y_m / P \quad \text{Where, } Y_r = \text{Real national income}$$

$$Y_m = \text{Money national income} \quad P = \text{Price index}$$

The formula signifies that development can be meaningful if an increase in money national income is not accompanied by increase in price level. It implies that price stability is an essential condition for promoting development. Thus, economic development signifies higher real national income.

c) Long Period

Economic development refers to an upward trend in real national output over a long period. "Although the upward trend means that each successive cyclical peak and trough is generally at a

higher level of real national output than the preceding peak and trough respectively, it is the increase in real national income between cycles rather than the increase within a cycle that denotes development". Since a major business cycle covers normally 6 to 13 years, long term process here refers to a sustained increase in real output over a period of at least 25 years.

Thus, economic development is a process consisting of a long chain of interconnected changes in fundamental factor supplies and in the structure of demand for products leading to a rise in real national income over a long period.

Benard Okun and Richard W. Richardson

According to Benard Okun and Richard W. Richardson, "Economic development may be defined as a sustained secular improvement in well being, which may be considered to be reflected in an increasing flow of goods and services".

A close examination of this definition reveals that it is more or less similar to the concept of development as explained by G.M. Meier. According to this definition, economic development implies continuous secular increase in national output for promoting material welfare of the society. It stresses on three important aspects of development; a) Economic development is a dynamic and long term phenomenon; b) It implies improvement in material welfare and c) National output is the measuring rod of material welfare.

This definition is not regarded satisfactory as it fails to explain the role of social, political, institutional and international forces. These forces are considered vital as they shape and direct the global economic development. So this definition leaves much to be desired.

Baran, Bachanan and Ellis

Some economists like Profs. Baran, Buchanan and Ellis interpret economic development as something more than merely an increase in total output; they believe that it should also denote a rising standard of living. They define economic development as a process whereby the total per capita income or output of a country increases over the long period.

- a) Prof. Baran says, "Let economic growth or development be defined as an increase over time in per capital output of material goods."

- b) In the words of Profs. Bachanan and Ellis; "Development means developing the real income potentialities of the under-developed areas by using investment to effect those changes and to argument those productive resources which promise to raise real income per person".

In board terms, it implies that in a developing economy.

$$\Delta Y_r > \Delta P \quad \text{-resulting in an increase in per capita income.}$$

Here, Δ = refers to increase, Y_r = to real national income and P = to size of population.

In other words, for economic development the rate of increase real income should be higher than the rate of population growth.

United Nations Expert Committee

According to this Committee, "Development concerns not only man's material needs but also the improvement of the social condition of his life. Development is, therefore, not only economic growth, but growth plus change— social, cultural and institutional as well as economic". This definition encompasses economic and non-economic aspects of development. This definition stresses on the expansion of development variables, and also improving the quality of those variables. For example, capital is a development variable. Not only the increased quantity of capital is needed but the improvement in its productivity is also required for development. Similar instances can be given in respect of other development variables. The central point of this definition is that quantitative and qualitative changes in development variables are considered essential ingredients of economic development.

Comprehensive Definition

In the end we may give a simple but comprehensive definition of economic development which runs as, "Economic development is a continuous process which has to be extended over a long period of time so as to break the vicious circle of poverty and lead a country to a stage of self-sustaining growth or to self-generating economy".

Thus, we can conclude that economic development is a process rather than the result of it which results in a rise in real national income, and the net national product must have a sustained increase i.e., it must be over a long period of time.

1.5.3 The Three Objectives of Development

Dear learners! As we discussed above development is both a physical reality and a state of mind in which society has, through some combination of social, economic, and institutional processes, secured the means for obtaining a better life. Whatever the specific components of this better life, development in all societies must have at least the following three objectives:

- ☛ To **increase** the **availability** and widen the distribution of **basic life-sustaining goods** such as food, shelter, health, and protection
- ☛ To **raise levels of living**, including, in addition to higher incomes, the provision of more jobs, better education, and national self-esteem
- ☛ To **expand the range of economic and social choices** available to individuals and nations by freeing them from servitude and dependence not only in relation to other people and nation-states but also to the forces of ignorance and human misery.

1.5.4 The Millennium Development Goals

In September (2000), the 189 member countries of the United Nations at that time adopted eight Millennium Development Goals (MDGs), committing them to making substantial progress toward the eradication of poverty and achieving other human development goals by 2015. The MDGs are the strongest statement of the international commitment to ending global poverty. They acknowledge the multidimensional nature of development and poverty alleviation; an end to poverty requires more than just increasing incomes of the poor. Although some observers still suspect that the MDGs will amount to no more than just another UN proclamation of worthy goals, by the first five- year review in 2005, these goals had become central to the way governments, international development agencies, and nongovernmental organizations carry out their development efforts. The MDGs have provided a unified focus in the development community unlike anything that preceded them.

The eight goals are ambitious: to eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development. The goals are then assigned

specific targets deemed achievable by 2015 based on the pace of past international development achievements. The goals and targets are found in Table 1.1.



<i>Goals and Targets</i>		<i>Indicators</i>
Goal 1:	Eradicate extreme poverty and hunger	
Target 1:	Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1. Proportion of population below \$1 per day 2. Poverty gap ratio (incidence x depth of poverty) 3. Share of poorest quintile in national consumption
Target 2:	Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight children (under five years of age) 5. Proportion of population below minimum level of dietary energy consumption
Goal 2:	Achieve universal primary education	
Target 3:	Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrollment ratio in primary education 7. Proportion of pupils starting grade 1 who reach grade 5 8. Literacy rate of 15–24 year olds.
Goal 3:	Promote gender equality and empower women	
Target 4:	Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015	9. Ratio of girls to boys in primary, secondary and tertiary education 10. Ratio of literate females to males of 15–24 year olds 11. Share of women in wage employment in the non-agricultural sector 12. Proportion of seats held by women in national parliament
Goal 4:	Reduce child mortality	
Target 5:	Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate 14. Infant mortality rate 15. Proportion of 1 year old children immunized against measles
Goal 5:	Improve maternal health	
Target 6:	Reduce by three-quarters, between 1990 and 2015, the maternal mortality rate	16. Maternal mortality rate 17. proportion of births attended by skilled health personnel
Goal 6:	Combat HIV/AIDS, malaria and other diseases	
Target 7:	Have halted by 2015, and begun to reverse, the spread of HIV/AIDS	18. HIV prevalence among 15–24 year old pregnant women 19. Contraceptive prevalence rate 20. Number of children orphaned by HIV/AIDS
Target 8:	Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures 23. Prevalence and death rates associated with tuberculosis 24. Proportion of TB cases detected and cured under DOTS (Directly Observed Treatment Short Course)

Goals and Targets		Indicators	
Goal 7:	Ensure environmental sustainability*		
Target 9:	Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	25.	Proportion of land area covered by forest
		26.	Land area protected to maintain biological diversity
		27.	GDP per unit of energy use (as proxy for energy efficiency)
		28.	Carbon dioxide emissions (per capita)
Target 10:	Halve by 2015, the proportion of people without sustainable access to safe drinking water	29.	Proportion of population with sustainable access to an improved water source
Target 11:	By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	30.	Proportion of people with access to improved sanitation
		31.	Proportion of people with access to secure tenure
Goal 8:	Develop a Global Partnership for Development*		
		Official Development Assistance**	
Target 12:	Develop further an open, rule-based, predictable, non-discriminatory trading and financial system	1.	Net ODA as percentage of Development Assistance Committee donors' GNP [targets of 0.7% in total and 0.15% for Least Developed Countries]
	Includes a commitment to good governance, development, and poverty reduction—both nationally and internationally	2.	Proportion of ODA to basic social services (basic education, primary health care, nutrition, safe water and sanitation)
		3.	Proportion of ODA that is untied
		4.	Proportion of ODA for environment in small island developing states
		5.	Proportion of ODA for transport sector in land-locked countries
Target 13:	Address the Special Needs of the Least Developed Countries	Market Access	
	Includes: tariff- and quota-free access for LDC exports; enhanced programme of debt relief for HIPC; cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction	6.	Proportion of exports (by value and excluding arms) admitted free of duties and quotas
		7.	Average tariffs and quotas on agricultural products and textiles and clothing
		8.	Domestic and export agricultural subsidies in OECD countries
		9.	Proportion of ODA provided to help build trade capacity
Target 14:	Address the Special Needs of landlocked countries and small island developing states	Debt Sustainability	
Target 15:	Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	10.	Proportion of official bilateral HIPC debt cancelled
		11.	Debt service as a percentage of exports of goods and services
		12.	Proportion of ODA provided as debt relief
		13.	Numbers of countries reaching HIPC decision and completion points
Target 16:	In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	14.	Unemployment rate of 15–24 year olds
Target 17:	In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	15.	Proportion of population with access to affordable essential drugs on a sustainable basis
Target 18:	In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	16.	Telephone lines per 1000 people
		17.	Personal computers per 1000 people
Other indicators to be determined			

*Source: 2002 World Development Indicators, p. 16–17 (<<<http://www.worldbank.org/data/wdi2002/2worldview.pdf>>>).

**Note: Some of the indicators will be monitored separately for the Least Developed Countries (LDCs), Africa, landlocked countries and small island developing states.

Appropriately, the first MDG addresses the problem of extreme poverty and hunger. The two targets for this goal are more modest: to reduce by half the proportion of people living on less than \$1 a day and to reduce by half the proportion of people who suffer from hunger. “Halving poverty” has come to serve as a touchstone for the MDGs as a whole. To achieve this target requires that progress be made on the other goals as well.

As reported by the United Nations Development Program (UNDP), if current trends continue, not all of the targets will be achieved, and great regional disparity is obscured when global averages are reported, as East Asia has done far better than Sub-Saharan Africa. Shockingly, in a world of plenty, the target of cutting the proportion of people who are chronically hungry in half by 2015 is very unlikely to be achieved. And the UNDP highlights that if global trends continue through 2015, the reduction in under-5 mortality will reach roughly one-quarter, far below the target reduction of two-thirds. This means that the target will be missed by 4.4 million avoidable deaths in 2015. Universal primary enrollment will not be achieved unless faster progress can be made in Sub-Saharan Africa. Projecting current trends, there will still be 47 million children out of school in 2015. And the UNDP reports that, the gap between the current trends and the target of halving poverty represents an additional 380 million people still living on less than \$1 a day in 2015.

The goal of Ensuring Environmental Sustainability is essential for securing an escape from poverty. This is immediately seen by looking at two of the targets: reduce by half the proportion of people without access to safe drinking water and achieve significant improvement in the lives of at least 100 million slum dwellers. But more generally, without protecting the environment of the poor, there is little chance that their escape from poverty can be permanent. Finally, the governments and citizens of the rich countries need to play their part in pursuit of the goal of “global partnership for development.”

The MDGs were developed in consultation with the developing countries, to ensure that, they addressed their most pressing problems. In addition, key international agencies, including the United Nations, the World Bank, the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), and the World Trade Organization (WTO) all helped develop the Millennium declaration and so have a collective policy commitment to

attacking poverty directly. The MDGs assign specific responsibilities to rich countries, including increased aid, removal of trade and investment barriers, and eliminating unsustainable debts of the poorest nations.

However, the MDGs have also come in for some criticism. For example, some observers believe that the MDG targets were not ambitious enough, going little beyond projecting past rates of improvement 15 years into the future. Moreover, the goals were not prioritized; for example, reducing hunger may leverage the achievement of many of the other health and education targets. Further, the setting of 2015 as an end date for the targets could discourage rather than encourage further development assistance if it is not met. Moreover, when the MDGs measure poverty as the fraction of the population below the \$1-a-day line, this is arbitrary and fails to account for the intensity of poverty—that a given amount of extra income to a family with a per capita income of, say, 70 cents a day makes a bigger impact on poverty than to a family earning 90cents per day.

Other critics have complained about the lack of goals on reducing rich- country agricultural subsidies, improving legal and human rights of the poor, slowing global warming (which is projected to harm Africa and South Asia the most), expanding gender equity, and leveraging the contribution of the private sector. While the reasonableness of some of these criticisms may be questioned, it should be acknowledged that the MDGs do have some inherent limitations.

Then we may conclude that development is both physical reality and a state of mind in which society has (through a combination of social, economic and institutional processes) secured the means of obtaining a better life. Therefore, development in all societies must have at least the following three objectives.

- ☛ To increase the availability and widen the distribution of basic life sustaining goods such as food, shelter, health, education and protection.
- ☛ To raise levels of living including, in addition to higher income, the provision of more jobs, better education, and greater attention to cultural and humanistic values, all of which will serve not only to enhance material well being but also to generate individual and national self-esteem.

- ☛ To expand the range of economic and social choices available to individuals and nations by freeing them from servitude and dependence not only in relation to other people and nation-states but also to the forces of ignorance and human misery.

The challenge of development economics lies on the formulation of economic theory and in the application of policy in order to understand better and meet these core components of development. Hence development economics has to adopt a the conventional economic theory to suit the conditions prevailing in developing countries, and many of the assumptions underlying the conventional economic models have to be abandoned or modified if they are to yield fruitful insight into development process. It is also probably true (as Todaro strongly argues) that if development mistakes has to be avoided economics must be viewed in the much broader perspective of the overall social system of a country, which includes values, beliefs, attitudes to effort and risk taking, religion, and the class system, instead of implementing policy based on economic theory alone.

1.6 Measurement and international comparison of growth and development

Dear learners, so far we have discussed the meaning of development, difference between economic growth and economic development, and the reasons for the upsurge of great interest in solving the problems of poor nations. It is now time to look at the major indicators of development.

Different methods of measuring development and making international comparisons have so far been devised. Among these the Income Measures, the Physical Quality of Life Index, the Human Development Index, and the Human Poverty Index are the widely employed indicators. In this section we will discuss each of these measures of development and their limitations.

1.6.1 Conventional Measures of Development

The dominant conventional measures of growth and development are the Gross National Product (GNP) or Gross Domestic Product (GDP) and their corresponding per capital values. GNP is calculated as the total domestic and foreign value added claimed by a country's residents without making deductions for depreciation of the domestic capital stock. The GDP measures the total

value for final use of output produced by an economy, by both residents and non-residents. Thus GNP comprises GDP plus the difference between the income residents receive from abroad for factor services (labor and capital) less payments made to nonresidents who contribute to the domestic economy.

Limitations of conventional income measures

Development is much broader term than economic performance, although the latter is essentially a part of it. In essence, development ultimately refers to the quality of life and of human welfare. Thus, in essence income indicators are incomplete and limiting measures of development.

Aside from their defects as indicators of development, the calculations of the GNP/GDP based measures suffer from a number of shortcomings. These include the following.

- ☛ The GNP/GDP measure excludes non-market activities, transactions and subsistence production. Since these occur to a significant degree in developing countries, this means that a sizeable part of economic activities are left unrecorded. This leads to the distortions of the GNP/GDP figures.
- ☛ National income accounting is also subject to a number of statistical problems. These include the risk of double counting of intermediate inputs; the underestimation and exclusion of unrecorded transactions, which are rampant in developing countries, particularly across borders; the statistical problems arising from the non-quantifiability of important economic variables and activities. The less developed an economy, the more serious these problems are likely to be.
- ☛ The use of national income data for the purpose of international comparisons also engenders a number of additional complications.
Generally, the basis for comparison must be identical and up to date. In spite of all efforts, statistical definitions are not uniformly used, applied or interpreted by different countries.
- ☛ Another difficulty arises as a result of differences in the rate of inflation among countries such that those with high rates of inflation can post very high levels of national income. National income deflators can moderate this problem if appropriately applied.
- ☛ The other problem in international comparison relates to the problem of conversion of national incomes measured in national currencies into the US dollar at the official exchange

rate. The concern is the underestimation of the living standard of developing countries. If the US dollar is used as a unit of account, the national per capita income of a given country in US dollar is given by $\text{GNP/Population} \times \text{exchange rate}$.

However, official exchange rates between currencies of two countries are not good measures of the purchasing power parity (PPP) between the countries, especially between countries at different levels of development. The reason is that exchange rates are largely determined by the supply of and the demand for currencies based on goods that are traded the prices of which tend to be equalized internationally.

PPP, however, depends not only on the price of traded goods but also on the prices of non-traded goods. The prices of traded goods are largely determined by unit labor cost which tends to be lower the poorer the country. PPP is, therefore, the number of units of a foreign country's currency required to purchase the identical quantity of goods and services in the developing country's local market as \$1 would buy in the United States. This point is elaborated more widely below.

We can take two commodities, TV set and a service of haircut, which are respectively one traded and the other is non-traded. Suppose the dollar price of a particular type of TV set in USA is \$500 and the exchange rate of one dollar is Birr 10. Without taking account of transport cost, tariff, etc, the price of the TV set in Ethiopia will be equal to Br. 5000.

If we consider the non-traded good, however, there will be a different story. Suppose in USA, haircut costs \$5. At the official exchange rate of Birr 10 to the dollar, the service in Ethiopia should be \$50. But the actual cost of this service in Ethiopia may be Birr 10. This would mean that as far as haircut is concerned, the value of the Birr is underestimated by a value of five times. Hence, the PPP rate of exchange for this particular service is \$1 to Birr 2 while the official exchange rate is \$1 to birr 10.

Clearly, if domestic prices in markets of developing countries are lower, PPP measures of GNP per capita will be higher than estimates using foreign exchange rates as the conversion factor. For example, China's 1997 GNP per capita was only 2.7% of that of the United States using the exchange-rate conversion. But it rises to 12.5% when estimated by the PPP method of conversion. In 1997, the ratio of the highest per capita income of Switzerland (\$44,320) and

Ethiopia (\$110) at foreign exchange rate was 403 to 1. But in PPP, these two countries had respectively a per capita income of \$26,320 and \$510 and the ratio is decreased significantly to 51.6 to 1. Hence, the income gaps between rich and poor nations thus tend to be less when PPPs are used. An illustration of the significant difference of using either official exchange or PPP on the level of per capita income of countries is indicated on table 1.1

Table 1.1 per capita GNP of selected countries at official exchange rate and PPP

Country	At official exchange rate	At PPPs exchange rate
Switzerland	44,230	26320
Japan	37850	23400
United States	28740	28740
United kingdom	20710	20520
Canada	19290	21860
Brazil	4720	6240
Mexico	3680	8120
Colombia	2280	6720
Shicipsires	1220	3670
China	860	3570
Pakistan	490	1590
India	390	1650
Bangladesh	270	1050
Nigeria	260	880
Ethiopia	110	510

Source: World Bank, World Development Report, 1998/99 in Todaro, 2000.

A part from the difficulty of measuring income and the difficulty of making inter-country comparisons, using a single figure of per capita income as a means of separating the developed from developing counties is somewhat arbitrary. This is because it ignores essential factors that should be incorporated (these will be discussed on the topic below).

Bearing in mind this arbitrariness of per capita income, it is still convenient to have a readily available and easily understandable criterion for classifying countries and perhaps per capita income is the best single index we have. It also has an advantage in focusing on raison deter of development: raising living standard and eradicating poverty.

In the last resort, per capita income is not a bad proxy for the social and economic structure of societies. If developing countries are defined on the basis of per capita income level, striking

similarities are found between the characteristics and development obstacles of many of the countries. Hence, per capita income may be used as a starting point for classifying level of development and can certainly be used to identify the need for development.

1.6.2 Alternative Measures of Development

By the beginning of the 1970s a momentum started to gather around the need for an earnest search of alternative indicators of development. Aside from the aforementioned deficiencies encountered in measuring income itself, this search has been prompted by the following considerations:

- ☛ The failure of the GNP/GDP measures to reflect the impact of growth on the pattern of income distribution
- ☛ The inability of the GNP/GDP measures to reflect the welfare impact of the goods and services produced as well as the likely costs to society of certain patterns of growth.
- ☛ The invalidity of the GNP/GDP indicator as a measure of well being in situations where growth has actually deepened poverty and income inequalities, increased unemployment and affected the environment adversely.

Therefore, the most important factor influencing the search for alternative indicators has been the marked shift in thinking among development economists, organizations and practitioners since the beginning of the 1970s about the meaning of development and the processes leading to it.

Attempts to construct alternative indicators have followed different routes. Some evolved around the modification of GNP/GDP based measures to incorporate some of their glaring omissions, e.g. environmental impact, health conditions, activities in the non-monetized sector, etc. Some others tried to construct an explicit index of welfare to replace the use of income measures. And others gave up the idea of a single indicator or index in favor of a set of indicators that show the different elements of welfare separately.

Among the developed alternative indicators the major are the physical quality of life index (PQLI) developed by Morris (1979), the Human Development Index (HDI) developed by UNDP, and the Human Poverty Index. These are to be discussed one by one below.

I. The physical Quality of Life Index (PQLI)

This composite index is based on three simple indicators: Infant mortality, life expectancy, and literacy. This measure gives equal weight to each of the three indicators. For each indicator, the performances of individual countries are rated on a scale of 1 to 100, where 1 represents the worst performance and 100 the best performance. For life expectancy the upper limit of 100 was assigned to 77 years (achieved by Sweden in 1973) and the lower limit of 1 was assigned to 28 years (the life expectancy of Guinea Bissau in 1950). Within the limits, each country's life expectancy figure is ranked from 0 to 100. Similarly, for infant mortality, the upper limit was set at 9 per 1,000 (achieved by Sweden in 1973) and the lower limit at 229 per 1000 (Gabon 1950). Literacy rates measured as percentages from 0 to 100 provide their own direct scale. This set of values are presented in Table 1.2

Table 1.2 indicators in constructing physical quality of life index

Dimension	Maximum	Minimum	Range
Infant Mortality Rate	229	9	220
Life Expectancy at Age One	77	38	39
Basic Literacy Rate	180	0	100

The PQLI of each country is given by the following formula.

$$\text{PQLI} = \frac{\text{Life expect. Index} + \text{infant mort. Index} + \text{literacy index}}{3}$$

3

The PQLI indirectly reflects the effects on human development of investment in health service, water and sewage systems, quality of food and nutrition, education, housing, and changes in income distribution. One positive aspect of the PQLI is, therefore, that it helped redirecting attention away from growth, toward a broader concept of human development.

Construction of PQLI

On the bases of the values of the component indicator given in the above table we can construct the PQLI in the following way

$$IMRI = \frac{229 - \text{Actual IMR}}{220}$$

$$LEI = \frac{\text{Actual Life Expectancy} - 38}{39}$$

$$BLI = \frac{\text{Actual Literacy Level} - 0}{100}$$

Let us calculate the PQLI for India on the bases of 2001 census data for these variables: IMR=67
LE=65 Years and BL=65%

$$IMRI = \frac{229 - 67}{220} = 0.74$$

$$LEI = \frac{65 - 38}{39} = 0.69$$

$$BLI = \frac{65 - 0}{100} = 0.65$$

$$PQLI = \frac{IMRI + LEI + BLI}{3} = \frac{0.74 + 0.69 + 0.65}{3} = 0.69$$

However, the PQLI has been criticized as an indicator of social development in relation to both the choice of indicators as well as the weight assigned to the different indicators.

- ☛ It is handicapped by the limited data availability
- ☛ It gives disproportionate weight to longevity as two of the three indicators, infant mortality and life expectancy are related to it.
- ☛ It gives equal weight to each indicator arbitrarily without obvious rationale
- ☛ It treats economic and social indicators separately, instead of combining them in a composite index.

II. The Human Development Index (HDI)

HDI is ranking various countries according to the relative success they have had with the human development of their population. UNDP is offering the HDI as an alternative to the GNP for measuring the relative socio-economic progress of nations. HDI has also attempted to take account of some of the limitations of the PQLI. HDI is based on three variables:

- ☛ longevity:- as measured by life expectancy at birth
- ☛ educational attainment:- as measured by a condition of adult literacy (two third weight) and a combined primary, secondary, and tertiary school enrollment ratios (one third weight)
- ☛ Standard of living measured by real per capita income at PPP. The marginal value of money income above the world average threshold of \$5120 real GDP per capita is assumed to be rapidly diminishing

To construct the index fixed minimum and maximum values are taken for each of the variables. For life expectancy at birth the range is 25-85 years. For adult literacy, the range is 0 – 100 percent. For real per capita income the range is \$100– 40,000. For any component of the HDI, the individual indices can be computed according to the general formula of:

$$\text{Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

$$\text{Life Expectancy Index} = \frac{\text{LE} - 25}{85 - 25}$$

$$\text{Education Index} = \frac{2}{3} \times \text{ALI} + \frac{1}{3} \times \text{GEI}$$

$$\text{Adult Literacy Index (ALI)} = \frac{\text{ALR} - 0}{100 - 0}$$

$$\text{Gross Enrolment Index (GEI)} = \frac{\text{CGER} - 0}{100 - 0}$$

$$\text{Income Index} = \frac{\log \text{GDPpc} - \log 100}{\log 40000 - \log 100}$$

Where:

- ☛ LE: Life expectancy
- ☛ ALR: Adult literacy rate
- ☛ CGER: Combined gross enrolment ratio Combined
- ☛ GDPpc: GDP per capita at PPP in USD

The index thus ranges from 0 to 1. If the actual value is equal to maximum the index is one. The HDI ranks countries into three groups: low human development (0.0 to 0.49), medium human development (0.50 to 0.79) and high human development (0.80 to 1.00). For any given year, HDI measures relative not absolute level of human development and that its focus is on the ends of development (longevity, educational achievement and standard of living).

Example

For example Bangladesh, whose life expectancy index in 2004 was 63.3 years, the life expectancy index is calculated as follows

$$\text{Life Exepectancy Index} = \frac{63.3 - 25}{85 - 25}$$

The education index is made up of two parts, with Two-thirds weight literacy and one –third weight on school enrollment. Because gross school enrollments can exceed 100% (because of older students going bank to school) this index is also capped at 100%. For the case of Bangladesh, adult literacy is estimated (rather uncertainly) at 41%, so

$$\text{Adult, literacy index} = \frac{41.0 - 0}{100 - 0} = \mathbf{0.41}$$

For the gross enrollment index, Bangladesh estimates that 57% of their primary, secondary, and tertiary age population is enrolled in school, so the country receives the following value:

$$\text{Gross enrollment index} = \frac{57 - 0}{100 - 0} = \mathbf{0.51}$$

Then, to get the overall education index, the adult literacy index is multiplied by two- thirds and the gross enrollment index is multiplied by one-third. This choice reflects the view that literacy is the fundamental characteristic of an educated person. In the case of Bangladesh, this gives us

$$\text{Education index} = \frac{2}{3} (\text{Adult literacy index}) + \frac{1}{3} (\text{gross enrollment index}) = \frac{2}{3} (0.41) + \frac{1}{3} (0.57) = \mathbf{0.46}$$

In the final index, each of the three components receives equal, or one- third, weight. Thus

$$\text{HID} = \frac{1}{3} (\text{income index}) + \frac{1}{3} (\text{life expectancy index}) + \frac{1}{3} (\text{education index})$$

For the case of Bangladesh,

$$\text{HDI} = \frac{1}{3} (0.49) + \frac{1}{3} (0.64) + \frac{1}{3} (0.46) = 0.53$$

Table 1.3 Human Development Index for 23 selected countries (2004 data)				
Country	Relative Ranking (lowest to highest)	Human Development Index (HDI)	Real 2004 GDP Per Capita (PPP U.S.\$)	GDP Rank Minus HDI Rank
<u>Low Human Development</u>				
Niger	177	0.311	779	-7
Ethiopia	170	0.371	756	+1
Malawi	166	0.400	646	+10
Tanzania	162	0.430	674	+13
Angola	161	0.439	2.180	-32
Guinea	160	0.445	2.180	-30
Nigeria	159	0.448	1.154	-1
<u>Medium Human Development</u>				
Bangladesh	137	0.530	1.870	+7
Pakistan	134	0.539	2.225	-6
India	126	0.611	3.139	-9
South Africa	121	0.653	11.192	-66
Turkey	92	0.757	7.753	-22
Peru	82	0.767	5.678	+12
China	81	0.768	5.896	+9
Saudi Arabia	76	0.777	13.825	-31
Brazil	69	0.792	8.195	-5
<u>High Human Development</u>				
Malaysia	61	0.805	10.276	-4
Costa Rica	48	0.841	9.481	+13
Qatar	46	0.844	19.844	-14
Chile	38	0.859	10.874	+18
United	18	0.940	30.821	-5

Kingdom				
United States	8	0.948	39.676	-6
Canada	6	0.950	31.263	+4
Norway	1	0.965	38.454	+3
<i>Source: Data from United Nations Development program Human Report 2006 (New York Oxford University press,2001)</i>				

One of the major innovations of HDI over the past few years has occurred through disaggregating the country's overall HDI into separate components to distinguish between Men and Women, different social classes reflecting skewed income distributions, and different regions and ethnic groups. Hence, the UN HDI has made a major contribution in improving our understanding of what constitutes development, which countries are succeeding and the share of different groups and regions within countries.

By combining social and economic data also, the HDI allows nations to take a broader measure of their development performance, both relatively and absolutely and thus to focus their social and economic policies more directly on those areas in need of improvement. Nevertheless, HDI has been criticized on grounds such as:

- ☛ It does not include non-quantitative elements of human development such as human freedom, the existence of civil liberties and the degree of political participation
- ☛ It is biased in the choice of indications
- ☛ Its assumption of the rapidly diminishing marginal value of money income above the world average threshold of \$ 5120 real GDP per capita distorts some HDI estimates and limits its applicability.
- ☛ Its statistical methodology may also be compromised by insufficient or inaccurate data.

With all these criticisms, the fact remains that the HDI when used in conjunction with the traditional economic measure of development greatly increases our understanding of which countries are really experiencing development and which are not. More importantly, by examining each of the three major components of the HDI and by disaggregating a country's overall HDI to reflect income distribution, gender, regional and ethnic differentials, we are now able to identify not only whether a country is developing but also whether various groups within that country are participating in that development.

III. Human Poverty Index (HPI)

The United Nations has constructed human poverty indices for developing countries. The composite measure focuses on dimensions of deprivations. The HPI for developing countries is based on three main indices:

- ☛ The percentage of the population not expected to survive to the age of 40 (P_1)
- ☛ The adult illiteracy rate (P_2)
- ☛ A deprivation index based on an average of three variables: the percentage of the population without access to safe water; the percentage of population without access to health service; and the percentage of the underweight children under five years old (P_3).

The formula is given by:

$$HPI = [1/3(P_1^3 + P_2^3 + P_3^3)]^{1/3}$$

1.7 Development gap

Absolute and Relative Gap

Eliminating the development gap between the rich and poor countries is the prime objective the new economic order of the world. The statement that ‘rich nations get richer and poor nations get poorer’ has become a popular ‘cliché’ in the literature on world poverty, but without much discussion of the fact or the precise magnitude at least in per capita terms. Hence, the first question is what the development gaps that exist between the rich and poor nations. The development gaps are

1. In real per capita GDP, leading to quality of life
2. Developing countries experience much higher unemployment – open and disguised unemployment.
3. The income is more unequal distribution in developing countries than developed countries.

4. The level of education, health and nutrition is much lower in developing countries than developed countries.
5. Most underdeveloped nations have more of the following than the developed nations (other development gap).
 - ☛ Poor infrastructure (e.g. road and dams),
 - ☛ Inadequate public services (disease control)
 - ☛ High level of corruption and red tape
 - ☛ Inefficient social institution

The second question would be “how should the development gap be measured?” There is no easy answer to this, although the absolute and relative difference in per capita income of nations is used to measure the development gap.

Relative difference in development gap between poor and rich nations will narrow if the per capita income growth of the poor nation is higher than that of the rich nations. But this excess of growth rate in per capita income of the poor over the rich nations is a precondition for the narrowing the absolute difference (absolute DG). In the short run, a narrowing of the relative difference may go hand in hand with widening absolute difference, if initial absolute gap is very wide. Thus, the rate of growth in per capita income to keep the absolute per capita income from widening is likely to be substantial than the rate required to keep the relative income gap the same. But suppose the relative gap does narrow, and the absolute gap widens, are the poor countries comparatively better or worse off? It is not difficult to argue that even if a relative per capita income gap is narrowing, the comparative position of the poor may have worsened because of the absolute gap has widened.

Let's take an illustration of average Indian living on equivalent of \$350 per annum compared with the American (USA) living on approximately \$22,000 per annum. Suppose the Indian's income rise by 20 percent and the America's income rise by 10 percent. The Indian is relatively better off, but comparatively worse off. The American's increased command over goods and services ($10\% \text{ of } \$22,000 = 2200$) far exceeds the Indian's increase ($20\% \text{ of } \$350 = 70$) unless marginal utility differs radically, divergence in total utility or welfare will widened in favor of American.

Let us turn now to the future comparative position of the poor countries, the magnitude of the development task, as far as more equitable living standard is concerned. Let us demonstrate this by answering the following four questions using a target of narrowing the relative and absolute per capita income difference between rich and poor nations.

1. Given the recent growth experience of the poor countries, how long would it take them to reach the current average level of per capita income in the industrialized countries?
2. Given the recent growth experience, of the poor countries relative to the industrialized countries, how many years would it take the per capita income gap to be eliminated?
Years needed to Eliminating absolute income gap
3. Given the rate of growth of the industrialized countries from now (1990) until the year 2010 (say). How fast would the poor countries have to grow for the per capita income to be equalized by that date?
4. Given the rate of growth of the industrialized countries, how fast would the poor countries have to grow merely to prevent the absolute per capita income gap between rich and poor countries from being any wider in the year 2010 than now?

By answering the first two questions, some idea can be obtained of the time scale of catching up process by the poor countries given their growth performance. The answer to the latter questions (3 and 4) give some idea of the growth task facing the poor countries in their struggle not only parity for living standard, but also in simply preventing the absolute gap from widening. Given the basic data, the answer to these questions posed involve little more than simple manipulation of the formula for compound interest:

$$S = P (1 + r)^n$$

Where P = the principal sum and S = the sum to which the principal grows at annual rate of growth, r , over n years. Let

Y_{Dt} = be the current level of per capita income in the industrialized countries = \$20,000

r_D = be the per capita income growth rate in the industrialized countries from 1990 to the year 2010 = 3 per cent per year

Y_{DCt} = be the current level of per capita income in the poor countries = \$1200

r_{DC} = be the actual per capita income growth rate in the poor countries = 2 per cent per year

Y_D^* = be the assumed level of per capita income in the industrialized countries in the year 2010 = \$36,000 as today's price (assuming 3% growth).

r_{DC}^* = the required per capita growth rate of poor countries

The solution to the first question is obtained from the formula:

$$Y_{Dt} = Y_{DCt} (1 + r_{DC})^n$$

From which we can derive

$$n = \frac{\log\left(\frac{Y_{Dt}}{Y_{DCt}}\right)}{\log(1 + r_{DC})}$$

Applying the assumed values above gives

$$n = \frac{\log\left(\frac{20,000}{1200}\right)}{\log(1 + 0.02)} = 95 \text{ years}$$

In other words, at a growth rate of 2 percent it would take the average poor country, with a per capita income of \$1200, 95 years to reach the current living standard enjoyed in the industrialized countries.

The solution for the second question is obtained from the expression

$$Y_{Dt} (1 + r_D)^n = Y_{DCt} (1 + r_{DC})^n$$

From which we can find how long it would take (n) for the per capita income gap to be eliminated between rich and poor countries, as long as the rate of per capita income growth in poor countries is greater than in the industrialized countries – otherwise, of course, the absolute gap would widen forever.

$$n = \frac{\log\left(\frac{Y_{Dt}}{Y_{DCt}}\right)}{\log(1+r_{DC}) - \log(1+r_D)}$$

A calculation can be made for any country whose average per capita income growth was in excess of that of the industrialized countries. Korea for example has a per capita income of \$5000 and a per capita income growth of 7% per annum. How long would it take Korea at this rate to catch up the present industrialized countries growing at 3 percent? The answer is:

$$n = \frac{\log\left(\frac{20000}{5000}\right)}{\log(1+0.07) - \log(1+0.03)} = 36 \text{ years}$$

This is already a short space of time, but clearly the lower the initial level of per capita income and the smaller the excess of growth above 3 percent, the longer the time it would take to catch up.

The solution for the third question is obtained from the expression:

$$Y_D^* = Y_{DCt} (1+r_{DC})^n$$

Where Y_D^* is the assumed level of per capita income in the industrialized countries in the year 2010, which is \$36,000 as today's price (assuming 3% growth). We can solve the required growth rate of the poor countries between the base period (1990) and the year 2010 ($n=20$) to equalize per capita incomes.

$$r_{DC}^* = \sqrt[n]{\frac{Y_D^*}{Y_{DCt}}} - 1$$

Applying the assumed magnitudes of the variables gives:

$$r_{DC}^* = \sqrt[20]{\frac{36000}{1200}} - 1 \cong 18 \text{ percent.}$$

The required growth rate is 18% per annum and hardly feasible. The magnitude of the development task is clearly colossal if defined in terms of achieving roughly comparable living

standards throughout the world by the coming one or two decades. For most of the poor countries, the per capita income growth has to be six fold, necessitating a ratio of investment to national income of 50% or more. Investment ratio of this order is simply not feasible, and in any case the countries themselves could not absorb such investment.

The solution to the fourth question is obtained from the expression:

$$Y_{Dt} - Y_{DCt} = Y_{Dt}(1+r_D)^n - Y_{DCt}(1+r_{DC})^n$$

Or if we assume by 2010 industrialized countries grow at 3% per annum from \$20000 per capita in 1990,

$$Y_{Dt} - Y_{DCt} = Y_D^* - Y_{DCt}(1+r_{DC})^n$$

Where the left hand side is the base level per capita income gap and n is 20 years. Solving for the growth rate that would have to be achieved to prevent the present gap from widening gives:

$$r_{DC} = \sqrt[n]{\frac{Y_D^* - (Y_{Dt} - Y_{DCt})}{Y_{DCt}}} - 1$$

Applying the assumed magnitudes of the variables gives

$$r_{DC} = \sqrt[20]{\frac{36000 - (20000 - 1200)}{1200}} - 1 = 14 \text{ percent}$$

This again is a growth rate not feasible, with the implication that the per capita income between rich and poor countries will almost certainly be wider in the year 2010 than now, given the assumed per cent average growth rate of the industrialized countries.

The above calculation are sensitive to the assumed future growth rate of industrialized countries, the choice of target year in the future, and the base year level of per capita income taken for poor countries. So you have to exercise this with different values of per capita income, growth rate and base year.

1.8 Sustainable Development

Dear learners! How do you define sustainable development? (Use the space left below to write your response)

Definition

Sustainable development is a term widely used by politicians all over the world, even though the notion is still rather new and lacks a uniform interpretation. Important as it is, the concept of sustainable development is still being developed and the definition of the term is constantly being revised, extended, and refined.

Dear learners you can try to formulate your own definition as you learn more about the relationships among its main components—the economic, social, and environmental factors of sustainable development—and as you decide on their relative significance based on your own system of values.

According to the classical **definition** given by the United Nations World Commission on Environment and Development in 1987, development is sustainable if it “**meets the needs of the present without compromising the ability of future generations to meet their own needs.**” It is usually understood that this “intergenerational” equity would be impossible to achieve in the absence of present-day social equity, if the economic activities of some groups of people continue to jeopardize the well-being of people belonging to other groups or living in other parts of the world.

Imagine, for example, that emissions of **greenhouse gases**, generated mainly by highly industrialized countries, lead to global warming and flooding of certain low-lying islands—resulting in the displacement and impoverishment of entire island nations. Or consider the situation when higher profits of pharmaceutical companies are earned at the cost of millions of

poor people being unable to afford medications needed for treating their life-threatening diseases.

“Sustainable” development could probably be otherwise called “equitable and balanced,” meaning that, in order for development to continue indefinitely, it should balance the interests of different groups of people, within the same generation and among generations, and do so simultaneously in three major interrelated areas—economic, social, and environmental.

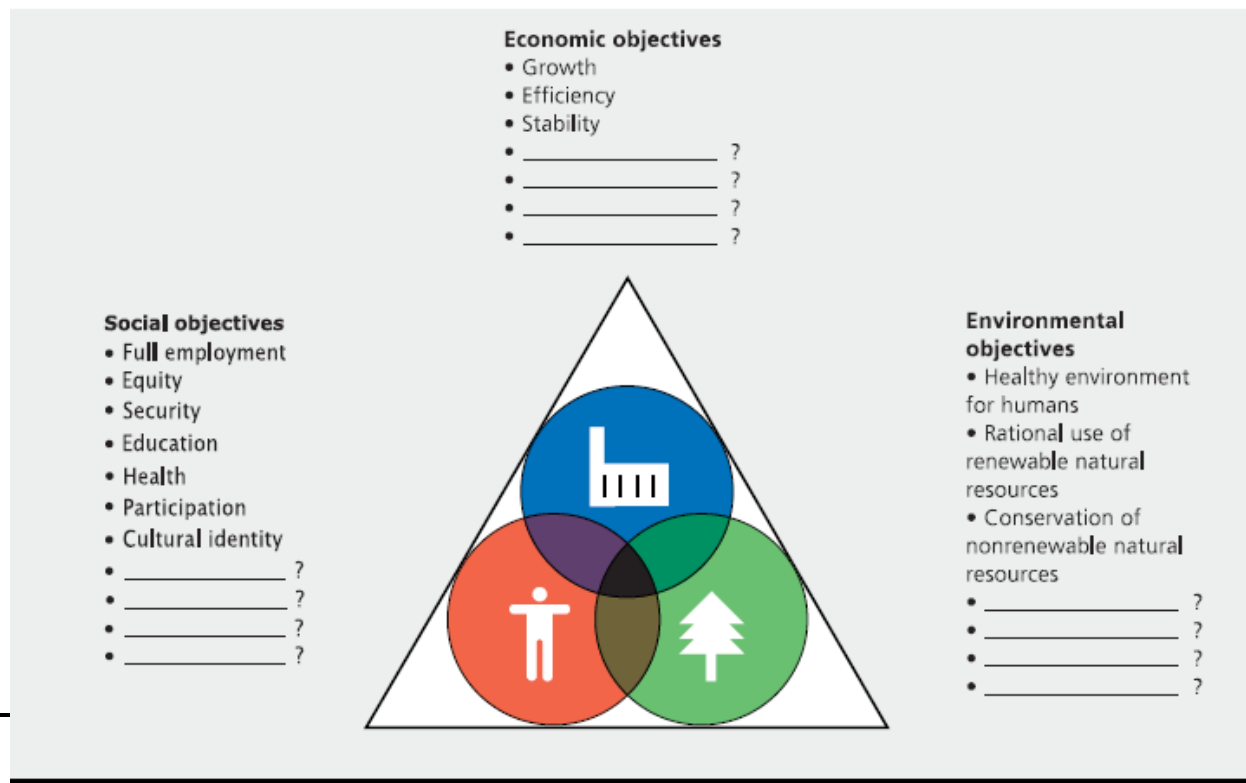
So, sustainable development is about equity, defined as equality of opportunities for well-being, as well as about comprehensiveness of objectives. Figure 1.1 shows just a few of the many objectives, which, if ignored, threaten to slow down or reverse development in other areas.

Dear learners! You are invited to add more objectives and explain how, in your opinion, they are connected to others

Obviously, balancing so many diverse objectives of development is an enormous challenge for any country. For instance, how would you compare the positive value of greater national security with the negative value of slower economic growth (loss of jobs and income) and some, possibly irreversible, environmental damage?

There is no strictly scientific method of performing such valuations and comparisons. However, governments have to make these kinds of decisions on a regular basis. If such decisions are to reflect the interests of the majority, they must be taken in the most democratic and participatory way possible. But even in this case, there is a high risk that long-term interests of our children and grandchildren end up unaccounted for, because future generations cannot vote for themselves.

Thus, to ensure that future generations inherit the necessary conditions to provide for their own welfare, our present day values must be educated enough to reflect their interests as well.

Figure 1.1 Objectives of Sustainable Development

The challenge is further complicated by the fact that in today's interdependent world many aspects of sustainable development are in fact international or even global. On the one hand, many decisions taken at the national or even local level actually have international consequences— economic, social, and environmental. When these consequences are negative, the situation is sometimes referred to as “exporting un-sustainability.” On the other hand, national policies are often inadequate to effectively deal with many challenges of sustainability. Thus international cooperation on the wide range of so-called trans-boundary and global problems of sustainable development becomes indispensable.

Arguably, the most critical problem of sustainable development—in each country as well as globally—is eradicating extreme poverty. That is because poverty is not only an evil in itself. It also stands in the way of achieving most other goals of development, from clean environment to personal freedom.

Another, closely related, global problem is establishing and preserving peace in all regions and all countries. War, as well as poverty, is inherently destructive of all economic as well as social and environmental goals of development (see Fig. 1.1).

In the final analysis sustainable development is about long-term conditions for humanity's multidimensional well-being. For example, the famous Rio Declaration, adopted by the United Nations Conference on Environment and Development in 1992 (also called the Earth Summit, held in Rio de Janeiro, Brazil), puts it this way: "Human beings are at the center of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature."

Check your progress Activity

Answer the following questions on the spaces provided below.

I. Discussion Items

1. Define development economics

2. Differentiate between Traditional Economics ,Political Economy and Development Economics

3. Describe the three core values of Development

4. Discuss the difficulties or criticism Millennium Development Goals

5. What is the difference between Economic Growth and Economic Development? Give brief out line of there difference.

-
-
-
6. What is Sustainable Development? What is the condition to say development is sustainable development?

II. Work out Questions

1. Calculate PQLI for hypothetical Country x where IMR=45 LE =70 years and BL = 78%
2. Given the following data calculate the HDI for country X , Life expectancy at birth (years) 52.4 , Adult literacy rate (% ages 15 and above) 35.9 , Combined primary, secondary and tertiary gross enrolment ratio (%) 45.1 ,GDP per capita (PPP US\$) 700
3. How long a country will take to double its income if growth rate of income is 10%? [Or How quickly will a country grow at 10% a year doubles its income?] Quadruple its income? What about a country growing at 5%per year?

Hint: A good approximation to get the doubling time is seventy divided by the annual growth rate expressed in percentage term.

Chapter Summery

The study of economic development is one of the newest, most exciting, and most challenging branches of the broader disciplines of economics and political economy.

Although development economics often draws on relevant principles and concepts from other branches of economics in either a standard or modified form, for the most part it is a field of study that is rapidly evolving its own distinctive analytical and methodological identity. Development economics is not the same as the Traditional Economics of advanced capitalist nations (“neoclassical” economics).

The three core values- sustenance, self-esteem, and freedom- represent common goals sought by all individuals and societies. They relate to fundamental human needs that find their expression in almost all societies and cultures at all times.

The MDGs are the strongest statement of the international commitment to ending global poverty. They acknowledge the multidimensional nature of development and poverty alleviation; an **end** to poverty requires more than just increasing incomes of the poor.

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

Relative difference in development gap between poor and rich nations will narrow if the per capita income growth of the poor nation is higher than that of the rich nations. But this excess of growth rate in per capita income of the poor over the rich nations is a precondition for the narrowing the absolute difference (absolute DG).

Sustainable development means that development should “keep going” it emphasizes the creation of sustainable improvements the quality of life of all people through increases in real income per capita, improvements in education, health and general quality of and improvements in quality of natural environmental resources. Thus sustainable development is economic development does not decrease over time.

Sustainable development aims at accelerating economic development in order to conserve and enhance the stock of environmental, human and physical capital without making future generations worse off.

Chapter II

Structural Features and Common Characteristics of the Third World

2. Introduction

Dear learners, we have already seen the concept of development and its measurements. We will use these concepts and their measurements as guideline in understanding the depth and width of the problems of countries of the third world. Thus, this chapter gives a short account of the dimensions of the development problems of poor nations. These countries have both similarities and difference among them in economic, geographical, historical, political, social, cultural and institutional factors. Here, it is attempted to shortly familiarize the student with the diversities and common characteristic features of developing countries. The chapter is divided into two parts. We will start our discussion with structural features developing countries and proceed to their common characteristic features.

Chapter Objectives

After successful completion of this chapter, you will be able to:

- ☛ Describe the Structural Features of developing countries.
- ☛ Understand common characteristic features of developing countries.

2.1 The structural features of the third world economies

This section portrays the structural diversity of developing nations. With this intention we will make an examination of eight critical components. These are

- 1) The size of the country (geographic area, size of population, and income levels)
- 2) Its historical and economical background
- 3) Its endowments of physical and unman resources
- 4) Its ethnic and religious composition
- 5) The relative importance of its public and private sector
- 6) The nature of its industrial structure
- 7) Its degree of dependence on external economic and political forces
- 8) The distribution of power and the institutional and political structure within the nation.

Dear learners, each of the above components are discussed in detail below. In doing this we will focus on regional comparisons of the developing countries of Africa, Asia, and Latin America and their sub regions.

1) Size and Income Level

Evidently, economic potential of a country is significantly determined by its physical and population size, and its level of national income per capita. These are also major factors differentiating one developing country from another. In the world of developing countries, larger and populated nations such as Brazil, India, Nigeria and Ethiopia existed side-by-side with small countries like Paraguay, Nepal and Djibouti.

This size provides both advantages and disadvantages. Large size usually presents advantages of diverse resource endowment, large potential markets, and lesser dependence on foreign sources of materials and products. But it also creates problems of administrative control, national cohesion, and regional imbalances.

However, it is to be born that there is no necessary relationship among a country's size, its level of per capita income, and the degree of equality or inequality in the distribution of that income. For example, as compared to Ethiopia, the neighboring country, Kenya is smaller in geographic and population size. But Kenya has about 3 times the per capita income of Ethiopia at official exchange rate. But Kenya has also lesser per capita income than Brazil and some other larger developing countries.

2) Historical Background

The other sources of diversity among the developing countries are their traditional and colonial heritages. Apparently, countries have their own different cultural background accumulated in their history making them to have different social and economic institutions. Moreover, developing nations were at one time or other colonies of Western European countries. The European colonial powers had a dramatic and long-lasting impact on the economies, political and institutional structures of their African and Asian colonies. The economic structures of these nations, as well as their educational and social institutions have typically been modeled on those of their former economic rulers.

Hence, the diversity in colonial heritage together with the indigenous cultural differences have resulted different structural problems in these countries. Depending on their colonial heritage therefore the countries are required to take different measures. Countries like those in Africa that only recently gained their independence are likely to be more concerned with consolidating and evolving their own national economic and political structures than with simply promoting rapid economic development. Their policies may consequently, reflect a greater interest in these immediate political issues.

Latin American countries have a longer history of political independence plus a more shared colonial heritage. Therefore, in spite of geographic and demographic diversity the countries possess relatively similar economic, social, and cultural institutions and face similar problems. In Asia, on the other hand, different colonial heritages and the diverse cultural traditions of the indigenous peoples have combined to create different institutional and social patterns.

3) Physical and Human Resources

Endowments of physical and human resources are other sources of disparities in economic growth potential of the counties. If we start with the physical resource endowments, on the one hand there are countries which are extremely and favorably endowed in resources such as minerals, raw materials, and fertile land.

On the other hand, there are also poorly endowed nations where endowments of raw materials and minerals and even fertile land are relatively minimal. Moreover, geography and climate can also play an important role in the success or failure of development efforts. Other things being equal, it is said that island economies seem to do better than landlocked economies. With respect to climate also temperate zone countries do better than tropical zone nations.

Developing countries are also distinguished one from the other in their human resource endowments. The human resource endowments includes not only the number of people and their skill levels but so also their cultural outlooks, attitudes toward work, access to information, willingness to innovate, and desire for self improvement.

Furthermore, the level of administrative skill will often determine the ability of the public sector to alter the structure of production and the time it takes for such structural alteration to occur.

This has to do with the whole complex of interrelationships between culture, tradition, religion, and ethnic and tribal fragmentation or cohesion. Thus the nature and character of a country's human resources are important determinants of its economic structure and these clearly differ from one region to the next.

4) Ethnic and Religious Composition

Ethnicity and religion often play a major role in the success or failure of development efforts. Evidently, the greater the ethnic and religious diversity of a country the more likely it is that there will be internal strife and political instability. There is also distinction in ethnic and religious composition among nations. Presently more than 40% of the world's nations have more than five significant ethnic populations.

In most cases, one or more of these groups face serious problems of discrimination. Over half of the world's less developed countries have recently experienced some form of interethnic conflict. Just in the first half of the 1990s, ethnic and religious conflicts leading to wide spread death and destruction took place in many African countries and some countries of other regions.

But neither overt physical conflict nor widespread violence is necessary to disrupt an economy or cause political instability. If development is about improving human lives and providing a widening range of choice to all peoples, racial, ethnic, or religious discriminations can be equally destructive. For example throughout Latin America, indigenous populations have significantly lagged behind other groups on almost every measure of economic and social progress.

In these countries, being indigenous makes it much more likely that an individual will be less educated, in poorer health, and in a lower socio economic structure than other citizens. This is particularly true for indigenous women. Ethnic and religious diversity need not, however, necessarily lead to inequality, turmoil, or instability. There have been numerous instances of successful economic and social integration of minority or indigenous ethnic populations in countries as diverse as Malaysia and Mauritius. The point is that the ethnic and religious composition of a developing nation and whether or not that diversity leads to conflict or cooperation can be important determinants of the success or failure of development efforts. Too often economists neglect to recognize this fundamental fact.

5) Relative Importance of the Public and Private Sectors

Most developing countries have mixed economic systems, featuring both public and private ownership and use of resources. The division between the two and their relative importance are mostly determined by the historical and political circumstances of the countries. Thus, in general, Latin American and South East

Asian nations have larger private sectors than South Asia and African nations.

The degree of foreign ownership on the private sector is another important variable to consider when differentiating among less developed countries. A large foreign owned private sector usually creates economic and political opportunities as well as problems not found in countries where foreign investors are less prevalent.

Economic policies, such as those designed to promote more employment, will naturally be different for countries with large public sectors and ones with sizeable private sectors. Direct government investment projects and large rural work programs may take precedence in economies dominated by the public sectors. In the private oriented economies, however, special tax allowances designed to induce private businesses that can employ more workers might be more common. Therefore, although the problem to be solved may be similar, the solution can differ in countries with significant differences in the relative importance of the public and private sectors.

6) Economic Structure

Developing countries are predominantly agrarian in economic, social, and cultural outlook. Labor force in most of these countries is overwhelmingly engaged in agriculture. The agricultural sector contributes significantly also to the GDP of many of the poor nations. Farming is not merely an occupation but a way of life for most people in Asia, Africa, and Latin America.

Nevertheless, there are great differences between the structure of agrarian systems and patterns of land ownership in Latin America and Africa. Asia agrarian systems are somewhat closer to those of Latin America in terms of patterns of land ownership. But even then the similarities are lessened by substantial by cultural differences. It is in the relative importance of both the

manufacturing and service sectors that we find the widest variation among developing nations. Most Latin American countries possess more advanced industrial sectors. But in the 1970s and 1980s countries like Taiwan, South Korea, and Singapore are rapidly becoming industrialized states.

The table below provides information on the distribution of labor force and GDP between agriculture and industry in some developing and developed countries. The contrast among the industrial structures of these countries is striking, especially in terms of the relative importance of agriculture.

Table 2.1 share of the population Employed in the industrial sector in selected Countries,									
	Agriculture			Industry			Services		
	Males	Females	Share of GDP	Males	Females	Share of GDP	Males	Females	Share of GDP
Africa									
Egypt	28	39	15	23	6	46	49	55	39
Ghana	60	50	38	14	15	23	27	36	39
Madagascar	77	79	28	7	6	16	16	15	56
South Africa	13	7	3	33	14	30	54	79	67
Uganda	60	77	33	11	5	25	28	17	43
Asia									
Bangladesh	50	59	20	12	18	28	38	23	53
Indonesia	43	45	13	20	15	46	37	40	41
Malaysia	16	11	9	35	27	52	49	62	40
Pakistan	38	65	22	22	16	25	40	20	53
South Korea	7	9	3	34	17	40	59	74	56
Philippines	45	25	14	17	12	32	39	64	53
Thailand	44	41	10	22	19	44	34	41	46
Vietnam	56	60	21	21	14	41	23	36	38
Latin America									
Colombia	32	8	13	21	16	34	48	76	53
Costa	21	5	9	26	13	30	52	82	62
Mexico	21	5	4	30	19	26	49	36	70
Nicaragua	43	10	19	19	17	28	32	52	53
UK	2	1	1	33	9	26	65	90	73
United States	2	1	1	30	10	22	28	90	77

In spite of common problems, therefore, development strategies may vary from one country to the next, depending on the nature, structure, and degree of interdependence among its primary, secondary, and tertiary industrial sector.

7) External Dependence: Economic, political, and Cultural

The degree to which a country is dependent on foreign economic, social, and political forces is related to its size, resources endowment, and political history. For most developing countries, this dependence is substantial. In some cases, it touches almost every facet of life.

Most small nations are highly dependent on foreign trade with the developed world. Almost all small nations are dependent on the importation of foreign and often inappropriate technologies of production. This fact alone exerts an extraordinary influence on the character of the growth process in these dependent nations.

But even beyond the strictly economic manifestations of dependence in the form of the international transfer of goods and technologies is the international transmission of institutions and values. Most notably are systems of education and governance, and attitudes toward life, work, and self. The transmission phenomenon brings mixed blessings to most less developed countries especially to those with the greatest potential for self reliance. A country's ability to chart its own economic and social destiny is significantly affected by its degree of dependence on these and other external forces.

8) Political Structure, Power, and Interest Groups

In the final analysis, it is often not the correctness of economic policies alone that determines the outcome of national approaches to critical development problems. The political structure and the vested interests and allegiances of ruling elites (e.g., large landowners, urban industrialists, bankers, foreign manufacturers, the military, and trade unionists) will typically determine what strategies are possible and where the main barriers to effective economic and social change may lie.

The concentration of interests and power among different segments of the populations of most developing countries is itself the result of their economic, social, and political histories and is likely to differ from one country to the next. Nevertheless, whatever the specific distribution of

power among the military, the industrialists, and the large landowners of Latin America; the politicians and high level civil servants in Africa; the oil Sheiks and financial moguls of the Middle East; or the land lords, money lenders, and wealthy industrialists of Asia – most developing countries are ruled directly or indirectly by small and powerful elites to a greater extent than the developed nations are.

Effective social and economic changes thus require either that the support of elite groups be enlisted or that the power of the elite be offset by more powerful democratic forces. Either way economic and social development will often be impossible without corresponding changes in the social, political, and economic institutions of a nation. Such institutional changes may include: land tenure systems, forms of governance, educational structures, labor market relationships, property rights, the distribution and control of physical financial asset, laws of taxation and inheritance and provision of credit.

2.2 Common Characteristics of Developing Countries

Dear learners, the previous discussions have demonstrated why it is sometimes risky to generalize too much about such a diverse set of nations. Nevertheless common economic features of developing countries permit us to view them in a broadly similar framework.

This section depicts various dimensions of the development gap between rich and poor countries and similarities of poor nations. These include level and growth rate of income, unemployment and underemployment, population growth rate, economic structure, political and institutional factors, and degree of dependence. We will attempt to identify these similarities and provide illustrative data to demonstrate their importance. For convenience, we can classify these common characteristics into seven broad categories.

- I. Low levels of living, characterized by low income inequality, poor health, and inadequate education
- II. Low levels of productivity
- III. High rates of population growth and dependency burden
- IV. High and rising levels of unemployment and underemployment
- V. Substantial dependence on agricultural production and primary product exports
- VI. Prevalence of imperfect markets and limited information

VII. Dominance, dependence, and vulnerability in international relations.

I. Low levels of Living

In developing nations, general levels of living tend to be very low for the vast majority of people. This is true not only in relation to their counterparts in rich nations but often also in relation to small elite groups within their own societies. These low levels of living are manifested quantitatively and qualitatively in the form of low income (poverty), inadequate housing, poor health, limited or no education, high infant mortality, low life and work expectancies, and in many case a general sense of malaise and hopelessness. Let us look at some recent statistic as comprising certain aspects of life in the underdeveloped countries and in the more economically advanced nations.

Per Capita National Income: as you have seen it in chapter one, the GNP per capita is often used as summary index of the relative economic well-being of people in different nations. One common distinguishing feature of developing countries as compared to developed nations is the extremely low level of income. Even when adjusted for purchasing power parity and after the impressive recent growth in China and India, the low and middle-income developing nations with more than five-sixths (84%) of the world's people received less than half (46%) of the world's income in 2005.

The difference in income between rich and poor nations will be apparent when one takes account of the distribution of world population. In this term, this means that almost 80% of the world's income is produced in the economically developed regions by 20% of the world's people. Thus the remaining four-fifths of the world's population is producing only one-fifth of total world output. In the year of 1997, the collective per capita incomes of the under developed countries averaged less than one-twentieth the per capita incomes of rich nations.

Growth Rates of Income: Many developing countries not only have much lower levels of per capita income but also have experience slower GNP growth than the developed nations. For example, the average growth rate slowed considerably during the 1980s. The real per capita GDP even declined by 0.2% in 1990 and in 1991 before rising again for the next five years. Between 1985 and 1995 economic growth in Latin America and the Caribbean averaged 0.3% and in

Africa -1.1 % per capita, while growth in the developed countries was averaging 1.9% per annum.

Table 2.2: Global Income Disparity between the Richest and Poorest 20 Percent of the World's Population, 1960-1991

Percentage of Global Income			Ratio of Income Shares
Year	Poorest 20%	Richest 20%	Richest to Poorest
1960	2.3	70.2	30 to 1
1970	2.3	73.9	32 to 1
1980	1.7	76.3	45 to 1
1991	1.4	85.0	61 to 1

Sources: United Nations Development Program, Human Development Report, 1992 & 1994 in Todaro 2000.

In fact, during the 1980s and early 1990s, the income gap between rich and poor nations widened at the fastest pace in more than the other three decades. The impact of this widening gap is striking. If, for example, we take the income levels of the richest 20% of the world's population in 1960 in comparison with the poorest 20%, we find that the income ratio was 30 to 1, whereas at the end of 1991 the rich were receiving 61 times the income of the poor. Table 2.2 gives the details of the ever-growing income disparity between the richest and poorest 20% of the world's population.

Distribution of National Income: The growing gap in per capita incomes between rich and poor nations is not the only manifestation of the widening economic disparity between the world's rich and poor. To appreciate the breadth and depth of Third World poverty, it is also necessary to look at the growing gap between rich and poor within individual LDCs.

All nations of the world show some degree of income inequality. There are large disparities between the income of the rich and of the poor in both developed and underdeveloped countries. Nevertheless, the gap between rich and poor is generally greater in less developed nations than in developed nations.

Comparing the share of national income that accrues to the poorest 40% of a country's population with that of the richest 20% can be used as an arbitrary measure of the degree of inequality. In this case, we discover many African and Latin American countries to be with

substantial income inequality. Nevertheless, most Asian countries have either moderate inequality or lesser inequalities in overall income distribution.

Moreover, there is no obvious relationship or correlation between levels of per capita income and degree of income inequality. Kenya, with the same low per capita income as India, has a much wider income disparity between the top 20% and bottom 40% of the population. Similarly, Kuwait, with almost the same high per capita income as Belgium, has a much lower percentage of its income distributed to the bottom 40% of its population.

Extent of Poverty: The magnitude and extent of poverty in any country depend on two factors: the average level of national income and the degree of inequality in its distribution. Clearly, for any given level of national per capita income, the more unequal the distribution, the greater the incidence of poverty. Similarly, for any given distribution, the lower the average income level, the greater is the incidence of poverty. But how is one to measure poverty in any meaningful quantitative sense?

During the 1970s, as interest in problems of poverty increased, development economists took the first step in measuring its magnitude within and across countries by attempting to establish a common poverty line. They went even further and devised the now widely used concept of absolute poverty. It is meant to represent a specific minimum level of income needed to satisfy the basic physical needs of food, clothing, and shelter in order to ensure continued survival. One common methodology has been to establish an international poverty line at, say, a constant U.S. \$370 per year (based, for example, on the value of the 1985 dollar) and then attempt to estimate the purchasing power equivalent of that sum of money in terms of a developing country's own currency.

We see that in the last decade of the 20th century, some 1.3 billion people, or 32% of the developing world population, were living in absolute poverty. Looking at individual regions we find the highest poverty rate (43%) in South Asia (Bangladesh, India, Pakistan, etc.) where the largest number of poor people lives (515 million). But sub-Saharan Africa with 219 million absolute poor has by far the fastest poverty growth rate. It is estimated that during the first decade of the 21st century, African poverty rates will approach 50 percent.

Health: In addition to struggling on low income, many people in developing nations fight a constant battle against malnutrition, disease, and ill health. Life expectancy in 1998 still averaged only 48 years, compared to 63 years among other Third World countries and 75 years in developed nations. Infant mortality rates (the number of children who die before their first birthday out of every 1,000 live births) average about 96 in the least developed countries, compared with approximately 64 in other less developed countries and 8 in developed countries.

In the mid-1970s, more than 1 billion people, almost half the population of the developing world (excluding China), were living on diets deficient in essential calories. One-third of them were children under 2 years of age. These people were concentrated in the poorest countries. In the 1990s, the situation continued to deteriorate in sub-Saharan Africa, with deep declines in food consumption and widespread famine. In both Asia and Africa, over 60% of the population barely met minimum caloric requirements necessary to maintain adequate health.

The extent of human deprivation in terms of some key health indicators is also another indicator of the low standard of living of these nations. For example, 766 million people in poor countries are without access to health services, 1.2 billion do not have access to safe drinking water, 1.9 billion (almost half the population) live without sanitation facilities, and 158 million children under age 5 are malnourished. Another often-used measure of child malnutrition is the percentage of children who are underweight. In the early 1990s, statistics revealed that 67% of the children in Bangladesh were underweight, 63% in India, 43% in South Africa, 42% in Vietnam, 38% in Ethiopia, and 36% in Ghana and Nigeria.

The access to clean drinking water is one of the most important measures of sanitation. Waterborne diseases such as typhoid fever, cholera, and a wide array of serious or fatal diarrhea illnesses are responsible for more than 35% of the deaths of young children in developing countries. Most of these diseases and resulting deaths would be quickly eliminated with safe water supplies.

To make matters worse, medical care is an extremely scarce social service in many parts of the developing world. In 1995, the number of doctors per 100,000 people averaged only 4.4 in the least developed countries, compared with 217 in the developed countries. The ratio of hospital beds to population is similarly divergent between these two sets of nations.

Moreover, when one realizes that most of the medical facilities in developing nations are concentrated in urban areas where only 25% of the population resides, the woefully inadequate provision of health care to the masses of poor people becomes strikingly clear. For example, in India, 80% of the doctors practice in urban areas where only 20% of the population resides. In Bolivia, only one-third of the population lives in cities, but 90% of the health facilities are found there. In Kenya, the population-to-physician ratio is 672 to 1 for the capital city of Nairobi and 20,000 to 1 in the rural countryside where 87% of the Kenyan population lives. In terms of health expenditures, more than 75% of LDC government outlays are devoted to urban hospitals that provide expensive, Western-style curative care to a minority of the population.

Finally, no discussion of health problems would be complete without mentioning the terrible human toll that AIDS is inflicting on millions of people in developing countries. After tuberculosis, AIDS is now the second leading infectious cause of death among adult men and women. To date, an estimated 6 million people worldwide have died of AIDS and more than 30 million have contracted the human immunodeficiency virus (HIV) that causes it. 90% of all these people live in LDCs. At the beginning of 1998, out of the total number of these victims 66% of them were residing in Africa while Asia and Latin America had 21% and 4.3% respectively.

Education: the spread of educational opportunities is the final indicator of the very low levels of living that is pervasive in developing nations. The attempt to provide primary school educational opportunities has probably been the most significant of all LDC development efforts. In most countries, education takes significant share of the governments' budget.

Yet in spite of some impressive quantitative advances in school enrollments, literacy levels remain strikingly low compared with the developed nations. For example, among the least developed countries, literacy rates average only 45% of the population. The corresponding rates for other Third World nations and the developed countries are approximately 64% and 99%, respectively. There is high level of children dropout of primary and secondary school, and out of the estimated illiterate adults, more than 60% are women. Moreover, the education of children who do attend school regularly is often irrelevant to the development needs of the nation in which they live.

Table 2.3 shows primary enrollment rates (percentage of students of primary age enrolled in school) primary a school pupil –to teacher ratio for the four county income groups and for five major developing regions. Enrollments have strongly improved in recent years, but student attendance and completion, along, with that tenant of basic skills such as functional literacy, remain problems in South Asia and Sub- Saharan Africa.

Table 2.3 Primary School Enrollment and Pupil-Teacher Ratios		
Region or group	Net primary school Enrollment (%)	primary pupil-teacher Ratio
Income group		
Low	78	42
Lower middle	92	22
Upper middle	93	22
High	94	16
Region		
East Asia and the pacific	93	22
Latin America and the Caribbean	95	24
Middle Fate and north Africa	90	23
South Asia	86	41
Sub –Saharan Africa	66	48
<i>Source date from word bank world development indicators 2007 (world bank 2007)</i>		

South Asia continues to have high levels of illiteracy low schooling attainment, and undernourishment. Still, in fields such as primary school completion, low-income countries are also making great progress. Some development Economists contends that countries level and distribution of education is the most fundamental determinant of future development prospects.

We can summarize the major illustrations of low standard of living of the poor nations by listing the following points. Firstly, there is low relative levels and, in many countries, slow growth rates of national income. Moreover, the real per capita income is either growing at a low level or in many countries stagnating.

The pattern of income distribution of the poor countries is highly skewed with the top 20% of the population receiving 5 to 10 times as much income as the bottom 40%. Consequently, great masses of Third World populations are suffering from absolute poverty, with up to 1.3 billion people living on subsistence incomes of less than \$370 per year. The low standard of living is

also manifested in the social aspects. Large segments of the populations are suffering from ill health, malnutrition, and debilitating diseases, with infant mortality rates running as high as 10 times those in developed nations. In education, these countries are characterized by low levels of literacy, significant school dropout rates, and inadequate and often irrelevant educational curricula and facilities.

Most important is the interaction of all six characteristics, which tends to reinforce and perpetuate the pervasive problems of "poverty, ignorance, and disease" that restrict the lives of so many people in the developing world.

II. Low levels of Productivity

In addition to low levels of living, developing countries are characterized by relatively low levels of labor productivity. The concept of a production function is often used to describe the way in which societies go about providing for their material needs. Production function is systematically relating outputs to different combinations of factor inputs for a given technology.

But in less developed countries the concept of technical engineering concept of a production function must be broadened by adding some important factors. Among its other inputs, this includes managerial competence, access to information, worker motivation, and institutional flexibility. Throughout the developing world, levels of labor productivity are extremely low compared with those in developed countries.

This can be explained by a number of basic economic concepts. For example, the principle of diminishing marginal productivity states that if increasing amounts of a variable factor (labor) are applied to fixed amounts of other factors (e.g., capital, land, materials), the extra or marginal product of the variable factor declines beyond a certain number.

Low levels of labor productivity can therefore be explained by the absence or severe lack of "complementary" factor inputs such as physical capital or experienced management. To raise productivity, according to this argument, domestic savings and foreign finance must be mobilized. This is to generate new investment in physical capital goods and build up the stock of human capital (e.g., managerial skills) through investment in education and training.

Institutional changes are also necessary to maximize the potential of this new physical and human investment. These changes might include such diverse activities as

- ☛ the reform of land tenure, corporate tax, credit, and banking structures;
- ☛ the creation or strengthening of an independent, honest, and efficient administrative service; and
- ☛ The restructuring of educational and training programs to make them more appropriate to the needs of the developing societies. These and other non economic inputs into the social production function must be taken into account if strategies to raise productivity are to succeed.

One must also take into account the impact of worker and management attitudes toward self-improvement; people's degree of alertness, adaptability, ambition, and general willingness to innovate and experiment; and their attitudes toward manual work, discipline, authority, and exploitation. Added to all these must be the physical and mental capacity of the individual to do the job satisfactorily. The economic success stories of "The Four Asian Tigers" -South Korea, Singapore, Hong Kong, and Taiwan-are often attributed to the quality of their human resources, the organization of their production systems, and the institutional arrangements undertaken to accelerate their productivity growth.

The condition of physical health most clearly reveals the close linkage that exists between low levels of income and low levels of productivity in developing nations. It is well known, for example, that poor nutrition in childhood can severely restrict the mental and the physical growth of individuals. Poor dietary habits, inadequate food, and low standards of personal hygiene in later years can cause further deterioration in a worker's health and can therefore adversely influence attitudes toward the job and the other people at work.

The worker's low productivity may be due in large part to physical lethargy and the inability, both physical and emotional, to withstand the daily pressures of competitive work. We may conclude, therefore, that low levels of living and low productivity are self-reinforcing social and economic phenomena in poor countries. It can also be said that they are the principal manifestations of and contributors to their underdevelopment.

III. Population Growth and Dependency Burdens

Global population has skyrocketed since the beginning of the industrial era, from just under 1 billion in 1800 to 1.65 billion in 1900 and to over 6 billion by 2000. Rapid population growth began in Europe and other now developed countries. But in recent decades, most population growth has been centered in the developing world. Compared with the developed countries, which often have birth rates near or even below replacement (Zero population growth) levels, the low-income developing countries have very high birth rates. More than five-sixths of all the people in the world now live in the developing world.

But population dynamics is another area of wide variation among developing countries. Populations of some developing countries, particularly in Africa, continue to grow rapidly. From 1990 to 2005, population in the low-income countries grew at 2% per year, compared to 1.1% in the middle-income countries (the high income countries grew at 0.7% per year, reflecting both births and immigration).

This swift population growth in developing countries is due to their higher birth rate as compared to death rate, though death rate also is high. Birthrates (the yearly number of live births per 1,000 population) in less developed countries are 30 to 40, whereas those in the developed countries are less than half that figure. The crude birthrate is probably one of the most efficient ways of distinguishing the less developed from the developed countries. There are few less developed countries with a birthrate below 20 per 1,000 and no developed nations with a birthrate above it.

Death rates (the yearly number of deaths per 1,000 populations) in Third World countries are also high relative to the developed nations. However, these poor nations have benefited from the progress of medicine for the masses and the campaigns against endemic disease. This was followed by fall in mortality. Hence, the differences in death rate between developing and developed countries are substantially smaller than the corresponding differences in birthrates. As a result, the average rate of population growth is now about 2.0% per year in Third World countries (2.3% excluding China). Even there are certain African countries approaching and even exceeding 3% per annum. This is as compared to population growth of 0.5% per year in the industrialized world. According to UN projections, now a day's four out of five inhabitants of the planet are coming from the developing countries.

These high birthrates have considerable socioeconomic implication. Children under the age of 15 make up almost 40% of the total population in these countries. This is as opposed to less than 21% of the total population in the developed countries. Thus in most developing countries, the active labor force has to support proportionally almost twice as many children as it does in richer countries. By contrast, the proportion of people over the age of 65 is much greater in the developed nations.

Both older people and children are often referred to as an economic dependency burden. This means that they are nonproductive members of society and therefore must be supported financially by a country's labor force (usually defined as citizens between the ages of 15 and 64). The overall dependency burden (i.e., both young and old) represents only about one-third of the populations of developed countries but almost 45% of the populations of the less developed nations. Moreover, in the latter countries, almost 90% of the dependents are children, whereas only 66% are children in the richer nations.

We may conclude, therefore, that not only are Third World countries characterized by higher rates of population growth, but they must also contend with greater dependency burdens than rich nations. The circumstances and conditions under which population growth becomes a deterrent to economic development is a critical issue.

IV. High Unemployment and Underemployment

One of the principal manifestations of and contributors to the low levels of living in developing nations is their relatively inadequate or inefficient utilization of labor in comparison with the developed nations. In the 1980s the unemployment and underemployment problem became increasingly pronounced and emerged as one of the most serious development problems.

Unemployment increased as a result of the fact that employment has been growing during the past at a rate which is much slower than the rate of growth of the labour force. Stagnating economic growth, the austerity programs implemented as a result of the Structural Adjustment Programs (SAPs) and high levels of rural-urban migration combined to precipitate this situation. For example, the ILO estimates that in the 1990s productive employment in sub-Saharan Africa increased by only 2.4 per cent per annum at a time when Africa labor force grown by a much faster rate of 3.3 per cent a year.

Unemployment in the developing world averaged 8% to 15% of the labor force. The unemployment rates in the 1980s for selected African countries were: Botswana, 3.2%; Cote d'Ivoire, 20%; Ethiopia 23%; Kenya, 16.2%; Nigeria, 9.7%; Senegal, 17.3%; Somalia, 22.3%; Tanzania, 21.6%; Zambia, 19% and Zimbabwe, 18.3% (ILO, 1991).

The unemployed exhibit two important characteristics, namely their youthfulness and their high level of education. Youth (the age group of 15 to 24) unemployment rates are on the average twice higher than adult unemployment rates. Unemployment is also creeping up the educational ladder. When the underemployed are added to the openly unemployed and when "discouraged workers" -those who have given up looking for a job-are added in, almost 35% of the combined urban and rural labor forces in poor nations is unutilized.

Given recent and current birthrates in most LDCs, their labor supply will be expanding rapidly for some time to come. This means that jobs will have to be created at equivalent rates simply to keep pace. Moreover, in urban areas rural - urban migration is causing the labor force to grow at explosive annual rates of 5%, to 7% in many countries (especially in Africa). The prospects for coping effectively with rising levels of unemployment and underemployment and for dealing with the frustrations and anxieties of an increasingly vocal and educated but unemployed youth are frighteningly poor. The dimensions and implications of the unemployment and migration problem will be discussed in detail in part two of development economics.

V. Substantial Dependence on Agricultural Production and Primary-Product Exports

The vast majorities of people in LDCs live and work in rural areas. Over 65% are rurally based, compared to less than 27% in economically developed countries. Similarly, 58% of the labor force is engaged in agriculture, compared to only 5% in developed nations. Agriculture contributes about 14% of the GNP of developing nations but only 3% of the GNP of developed nations.

There is striking difference between the proportionate size of the agricultural population in Africa, which constitutes (68%) and South Asia (64%) versus North America (3%). But the average productivity of agricultural labor is almost 35 times greater in North America than in Asia and Africa combined. Although international comparative figures are often of dubious

quality regarding both precision and methods of measurements, they nevertheless give us rough orders of magnitude. Even after making necessary adjustments for Third World non-marketed agricultural output, the differences in agricultural labor productivity would still be very sizable.

Agricultural productivity is low not only because of the large numbers of people in relation to available land but also because LDC agriculture is often characterized by primitive technologies, poor organization, and limited physical and human capital inputs. Technological backwardness persists because Third World agriculture is predominantly noncommercial peasant farming.

In many parts of the world, especially in Asia and Latin America, it is characterized further by land tenure arrangements in which peasants rent rather than own their small plots of land. Such land tenure arrangements take away much of the economic incentive for output expansion and productivity improvement.

Even where land is abundant, primitive techniques and the use of hand plows, drag harrows, and animal (oxen, and donkey) or raw human power necessitate that typical family holdings be not more than 5 to 8 hectares. In fact, in many countries, average holdings can be as low as 1 to 3 hectares. The number of people that this land must support both directly and indirectly often runs as high as 10 to 15 people per hectare. It is no wonder that efforts to improve the efficiency of agricultural production and increase the average yields of rice, wheat, maize, soybeans, and millet are now and will continue to be top-priority development objectives.

Dependence on Primary Exports: Most economies of less developed countries are oriented toward the production of primary products. These primary commodities form their main exports. For example, for all non-Asian developing countries, these primary products account for over 70% of exports. Except in countries blessed with abundant supplies of petroleum and other valuable mineral resources and a few leading Asian exporters of manufactured goods, most LDC exports consist of basic foodstuffs, nonfood cash crops, and raw materials. In sub-Saharan Africa, primary products account for over 80% of total export earnings.

Most poor countries need to obtain foreign exchange in addition to domestic savings in order to finance priority development projects. Although private foreign investment and foreign aid are a significant but rapidly declining source of foreign exchange, exports of primary products typically account for 60% to 70% of the annual flow of foreign currency into the developing

world. Even though exports are so important to many developing nations, LDC export growth (excluding oil exports) has barely kept pace with that of developed countries.

Consequently, even in their best years, most non-oil-exporting developing nations have been losing ground to the more developed countries in terms of their share of total world trade. In 1950, for example, the LDCs' share was nearly 33%. It has fallen in almost every year since and currently stands at around 20%.

Countries with the poorest 20% of the world's population did even worse. By 1991, their share of world trade had fallen to 1.4%, while countries with the richest 20% had captured 85% of world trade. Most of the success in export promotion since 1970 has been captured by a few OPEC countries in the 1970s and the Four Asian Tigers, along with a few other NICs in the 1980s and 1990s. The majority of LDCs have experienced a continuing decline in their share of world trade.

VI. Imperfect Markets and Incomplete Information

Starting from the 1980s almost every developing country is moving toward the establishment of a market economy for many reasons. Many countries did so at the behest of the World Bank, which kept advocating "market-friendly" economic policies as preconditions for loans. There seemed to be a growing consensus that there had been too much government intervention in the workings of Third World economies. This government intervention is sighted by many as the major cause of the problems in the poor nations. Hence, free market and unfettered competition are considered as the key to rapid economic growth.

But the presumed benefits of market economies and market-friendly policies depend heavily on the existence of institutional, cultural, and legal prerequisites that are taken for granted in the industrial societies. In many LDCs, these legal and institutional foundations are either absent or extremely weak. They include

- ☛ the existence of a legal system that enforces contracts and validates property rights;
- ☛ a stable and trustworthy currency;
- ☛ an infrastructure of roads and utilities that results in low transport and communication costs so as to facilitate interregional trade

- ☛ a well-developed system of banking and insurance,
- ☛ formal credit markets that select projects and allocate loanable funds on the basis of relative economic profitability and enforce rules of repayment, and
- ☛ Substantial market information for consumers and producers about prices, quantities, and qualities of products and resources as well as the creditworthiness of potential borrowers.

These six factors, along with the existence of economies of scale in major sectors of the economy; thin markets for many products due to limited demand and few sellers; widespread externalities (costs or benefits that accrue to companies or individuals not doing the producing or consuming) in production and consumption; and the prevalence of common property resources (e.g., grazing lands, waterholes) mean that markets are often highly imperfect.

Moreover, information is limited and costly to obtain, thereby often causing goods, finances, and resources to be misallocated. Therefore, the existence of imperfect markets and incomplete information systems remains a common characteristic of developing nations and an important contributing factor to their state of underdevelopment.

VII. Dominance, Dependence, and Vulnerability in International Relations

For many less developed countries, a final significant factor contributing to the persistence of low levels of living, rising unemployment, and growing income inequality is the highly unequal distribution of economic and political power between rich and poor nations. These unequal strengths are manifested in economic and non economic aspects of the relationships. Economically, the dominant powers of rich nations control the pattern of international trade. They have also the ability to dictate the terms whereby technology, foreign aid, and private capital are transferred to developing countries.

Other equally important aspects of the international transfer process can serve to inhibit the development of poor nations. One subtle but nonetheless significant factor has been the transfer of First World values, attitudes, institutions, and standards of behavior to Third World nations. Examples include the colonial transfer of often inappropriate educational structures, curricula, and school systems; the formation of Western-style trade unions; the organization and orientation of health services in accordance with the curative rather than preventive model; and the

importation of inappropriate structures and procedures for public bureaucratic and administrative systems.

Of even greater potential significance may be the influence of rich-country social and economic standards on developing country salary scales, elite lifestyles, and general attitudes toward the private accumulation of wealth. Whether there are market-friendly policies or extensive government intervention, such attitudes can often lead to corruption and economic plunder by a privileged minority.

Finally, the penetration of rich-country's' attitudes, values, and standards also contributes to a problem widely recognized and referred to as the international brain drain. Brain drain is the migration of professional and skilled personnel, who were often educated in the developing country at great expense, to the various developed nations. Examples include doctors, nurses, scientists, engineers, computer programmers, and economists.

The net effect of all these factors is to create a situation of vulnerability among Third World nations in which forces largely outside their control can have decisive and dominating influences on their economic and social well being

Chapter Summery

At very low income levels in fact a vicious cycle may set in whereby low income leads to low investment in education and health as well as plant and equipment and infrastructure which in turn leads to low productivity and economic stagnation. This is the well known vicious cycle

Compared with developed countries, much of the developing world has lagged in its average levels of nutrition, health (as measured by life expectancy), and education (measured by literacy), the under -5 mortality is still 15 time higher in low –income countries, although some progress has been made since 1990.

The enormous gap in per capita incomes between a rich and a poor nation is not any manifestation of deprivation in developing countries. To appreciate the breadth and depth of deprivation in developing countries, it is also necessary to look at the gap between rich and poor within individual LDCs.

The magnitude and extent of poverty in any country depend on two factors: the average level of national, income and the degree of inequality in its distribution. Clearly, for any given level of national per capital income, the more unequal the distribution, the greater the incidence of poverty. Similarly, for any given distribution, the lower the average income level, the greeter the incidence of poverty.

Along with lower industrialization, developing nations have tended to have a higher dependence on primary exports. Most developing countries have diversified away from agricultural and mineral exports to some degree. The middle income countries are rapidly catching up with the developed world in the much less advanced in their skill and technology content.

Developing countries are primarily tropical or subtropical; and they suffer more from tropical pests and parasites, endemic diseases such as malaria, water resource constraints, and extremes of heat. A great concern going forward is that global warming is projected to have its greatest negative impact on Africa and south Asia.

Most developing countries have mixed economic systems, featuring both public and private ownership and use of resources. The division between the two and their relative importance are mostly a function of historical and political circumstances.

The people living in low-income countries have, on average, a lower level of real per capita income than their developed country counterparts had in the nineteenth century.

International free trade has been called the “engine of growth “that propelled the development of today’s economically advanced nations during the nineteenth and early twentieth century’s.

CHAPTER III

Theories of Economic Growth and Development

Introduction

In the previous chapter, we have discussed the dimensions of the problems of developing countries, which may be called their diversities and common characteristics. Generally, we have tried to make an assessment of the factors that make these countries to be categorized as poor countries. We have also assessed the differences among them that should be observed in formulating development policies and strategies.

Now it is time to look at some of the available tools useful in explaining development problems and formulating relevant development policies and strategies. These helpful instruments are the growth models and development theories. There are different theories explaining the diverse development problems of countries at different social, economic, political, and institutional circumstances.

This chapter is divided into two major parts: the growth models and development theories. The first part discusses four growth models divided in to two which are the Harrod-Domar growth models and the neoclassical growth models. Then we will proceed to the discussion of some of the major development theories.

Chapter Objective

At the end of this chapter you are able to

- ☛ See the historic and intellectual evolution of theories of economic growth and development
- ☛ Understand the technical aspects of the Harrod and Domar model, Solow model and new growth theories (Endogenous growth theories).
- ☛ Difference and similarity between different development theories such as the theory of big push, balanced and unbalanced growth theories.
- ☛ See the main defects (shortcomings) of different growth and development models

3.1 ROSTOW'S STAGES OF ECONOMIC GROWTH

Walt W. Rostow uses the historical approach to explain the process of economic development. The essence of Rostow's stages of growth is that it is logically and practically possible to identify stages of development and to classify societies according to those stages. According to him, there are five stages of economic growth; namely

- I) Traditional Society
- II) Pre-conditions for the Take-off
- III) Take-off
- IV) Drive to Maturity, and
- V) Age of Mass Consumption

I. Traditional Society

A traditional society has been defined "as one whose structure is developed within limited production function based on pre-Newtonian science and technology and as pre-Newtonian attitudes towards the physical world." This does not mean that there was little economic change in such societies. In fact, more land could be expanded, manufactures could be brought under cultivation, the scale and pattern of trade could be expanded, manufactures could be developed and agricultural productivity could be raised along with increase in population and real income. But the undeniable science and technology 'a' ceiling existed on the level of attainable output per head. It did not lack inventiveness and innovations, but lacked the tools and the outlook towards the physical world of the post-Newtonian era.

The social structure of such societies was *hierarchical* in which family and clan connection played a dominant role. Political power was concentrated in the regions, in the hands of the landed aristocracy supported by a large retinue of soldiers and civil servants. More than 75 percent of the working population was engaged in agriculture. Naturally, agriculture happened to be the main source of income of the state and the nobles, which was dissipated on the construction of temples and other monuments, on expensive funerals and weddings and on the prosecution of wars.

II. Pre-conditions for the Take-off

The second stage is a ***transitional era*** in which the pre-conditions for sustained growth are created. The pre-conditions for sustained growth were created slowly in Britain and Western Europe, from the end of the 15th and the beginning of the 16th centuries, when the Mediaeval Age ended and the Modern Age began. The pre-conditions for take-off were encouraged or initiated by four forces: The New learning or Renaissance, the New Monarchy, the New World and the New Religion or the Reformation. These forces led to 'Reasoning and Skepticism in place of 'Faith' and Authority, and brought an end to feudalism and led to the rise of national states, inculcated the spirit of adventure which led to new discoveries and inventions and consequent the rise of the bourgeoisie- the elite-in the new mercantile cities. Thus these forces were instrumental in bringing about changes in social attitudes expectation, structure and values. Generally speaking, the pre-conditions arise not endogenously but from some external invasion. For example, the pre-conditions ended in Europe (excluding Britain) with the domination of Napoleon Bonaparte whose victors armies set in motion new ideas and attitudes which brought about changes in the structure of traditional societies and paved the way for the unification of Germany and Italy.

In any case, the process of creating pre-conditions for takeoff from traditional society follows along these lines:

- ☛ The idea spreads that economic progress is possible and is a necessary conditional for some other purpose, judged to be good, be it national dignity, private profit, the general welfare, or better life for the children.
- ☛ Education for some at least, broadens and changes to suit the needs of modern activity.
- ☛ New types of enterprising men come forward in the private economy in government, or both, willing to mobilize savings and to take risks in pursuit of profit to modernization.
- ☛ Banks and other institutions for mobilizing capital appear.
- ☛ Investments increase, notably in transport, communications and in raw materials in which other nations may have an economic interest.

- ☛ The scope of commerce internal and external, widens And here and there, modern manufacturing enterprise appears, using the new methods.

The pre-conditions for sustained industrialization, according to Rostow, have usually required radical changes in three non-industrial sectors.

First: a build-up of social overhead capital; especially in transport, in order to enlarge the extent of the market, to allow the state to rule effectively.

Second a technological revolution in agriculture so that agricultural productivity increases to meet the requirements for a rising general and urban population.

Third, an expansion of imports, including capital imports, financed by efficient production and marketing of natural resources, for exports efficient.

The continuous development and expansion of modern industry was mainly possible by the pouching bake of profits into fruitful investment channels As Rostow says: The essence of the transition can be described legitimately as a rise in the rate of investment to a level which regularly substantially and perceptibly outstrips population growth.

The role of social and political factors in cheating the per-conditions has already been explained in the beginning of this stage' But the political forces deserve further explanations with reference to under developed countries and colonial territories.

III. The Take-off

Take-off is defined by Rostow as “an industrial revolution tied directly to radical changes in the methods of production having their impact over a short period of time which lasts for two decades.” The take-off is the most important stage in the life of the society. Economic growth is a normal condition of the society. Forces of modernization operate against the habits, institutions, the values and interest of the traditional society and make a decisive break through. The following are three necessary conditions for take-off:

- i) a rise in the rate of productive investments to a level in excess of 10% of the national income in order for per capita income to rise sufficiently to guarantee adequate future levels of saving and investment
- ii) the development of one or more substantial manufacturing sector with a high growth rate and
- iii) The existence of political, social and institutional framework which can foster economic development.

Historically, domestic finance for take-off seems to have come from two main sources.

- ☛ From diversion of part of the product of agriculture. Example in Japan, USSR
- ☛ From enterprising landlords voluntarily ploughing back rents into commerce and industrial.

There are two approaches for take-off:

Aggregate approach-this is based on Harrod model of growth

$G = \frac{s/y}{c}$ for growth either s/y must be high or c must be low

Leading-sector approach: Rostow emphasized on the importance of leading growth sector for the take-off. This approach is based on the principle of unbalanced growth theory. It assumes that simultaneous growth in all the sectors is not possible because of limitation of resources. Some sectors of the economy will play a leading role. Example, railway transports industry, iron and steel etc. Different industries played leading role in different countries example, textile in UK; iron and steel, shipbuilding, and textile in Japan etc.

Rastow argues that an industry can play the role of leading sector in the take-off stage provided that four conditions are met:

- ☛ That the market for the product is expanding rapidly to provide a firm basis for the growth of output
- ☛ That the leading sector generates secondary expansion

- ☛ .That the sector has an adequate and continual supply of capital from ploughed back profits.
- ☛ The new production functions can be continually introduced into the sector, meaning scope for increased productivity

The take- off period is supposed to be short, lasting for about two decades. Rostow has given the following tentative take - off dates for those countries which are considered to be airborne

Table 3.1 Tentative Take - Off Dates

Country	Take - off	Country	Take-off
Great Britain	1783-1802	Japan	1878-1900
France	1830-1860	Russia	1890-1914
Belgium	1833-1860	Canada	1896-1914
United States	1843-1860	Argentina	1935
Germany	1850-1873	Turkey	1937
Sweden	1868-1890	India	1952

IV. The Drive to Maturity

Rostow defines it "as the period when a society has effectively applied the range of modern technology to the bulk of its resources. It is a period of long sustained economic growth extending well over four decades. New production techniques take the place of the old ones. New leading sectors are created. Rate of net investment is well high over 10 per cent of national income and the economy is able to withstand unexpected shocks.

Rostow gave the symbolic dates for technological maturity of the following countries:

Table 3.2 Symbolic Dates for Technological Maturity

Great Britain	1850	Sweden	1930
United States	1900	Japan	1940
Germany	1910	Russia	1950
France	1910	Canada	1950

When a country is the stage of technological maturity, three significant changes take place

- i) *First*, the character of working force changes. It primarily becomes skilled. People prefer to live in urban areas rather than in rural. Real wages start rising and the workers organize themselves in order to have greater economic and social security.
- ii) *Second*, The character of entrepreneurship changes. Rugged and hearted working masters give way to polished and polite efficient managers.
- iii) *Third* the society feels bored of the miracles of industrialization and wants something new leading to a further change.

V. Age of High Mass Consumptions

During this stage, the balance of attention of society is shifted from supply to demand for goods and services and from problems of production to consumption and welfare. There is a greater tendency towards mass consumption of durable consumer goods, maintaining full employment and an increasing sense of security which leads to high rates of population growth.

It should be pointed out, however, that Rostow's last two stages – “Drive to Maturity” and “Age of Mass consumption” describes a developed industrial economy and is the result of successful take-off. The characteristic elements of the second and third stages- 'pre-conditions for take-off' and 'Take-off' are also more or less similar.

Criticisms of Rostow's Model

Rostow's model has been severely criticized and rejected as both an absurdity, and an inappropriate basis for development. In spite of many years of striving and actually satisfying its pre-conditions especially through the achievement of its savings investment target of 20–25% neither take-off nor self-sustained development has occurred in most Third world Countries. Rostow's stages of growth have thus been rejected on several grounds. Let us comment on these 'stages' in detail

- (1) **Traditional Society not Essential for Development.** A number of nations such as the United States, Canada, New Zealand and Australia were born free of traditional societies,

and they derived the preconditions from Britain, a country already. So it is not essential for growth that a country must pass through the first stage.

- (2) **Preconditions may not precede the Take-off.** In the case of preconditions, it is not necessary that an agricultural revolution and accumulation of social overhead capital in transport must take place before the take-off.
- (3) **Overlapping in the Stages.** In fact the experience of most countries tells us that development in agriculture continued even in the take-off stage. The take-off in the case of New Zealand and Denmark is attributed to- agricultural development. Similarly, social overhead capital in transport, especially in railways, has been one of the leading sectors in the take-off, as Rostow himself tells us. It shows that there is considerable overlapping in the different stages.
- (4) **Criticism of the Take-off.** The most widely discussed and controversial stage is the take-off. As Cairncross has stated "The stage that has struck the public mind most forcibly is undoubtedly that of the take-off largely, no doubt, because the aeronautical metaphor-prolonged in the phrase "into self-sustained growth"-suggests at once an effortlessness and finality congenial to modern thought.

The Take-off Dates are Doubtful, Economic historians are skeptical about the take-off dates suggested by Rostow. The dates also vary from publication to publication. For example for India the Take-off into Self-sustained growth was given as 1937; while in the later publications it has been put as 1952. In fact, it will take many years of research to determine the correctness or otherwise of the dates suggested by Rostow. Possibilities of failure not considered. According to Habakkuk "In his aeronautical concept of growth he (Rostow) ignored the up and downs and crash landings. Further, the analysis of the take-off neglects the effect of historical heritage, the effect of entry into the process of modern economic growth, degree of backwardness, and other relevant factors on the characteristics of the early phases of modern economic growth in the different countries.

Even the necessary conditions for take-off are not without limitations.

- (a) **Growth Rate of Investments is Arbitrary** .The first condition , of a rise in the rate of productive investment to over 10 per cent of national income is arbitrary As Das Gupta has remarked.
 - (b) **Some specific Industries cannot be the Leading Sectors**, The second condition relates to the rapid development of lading sectors. Rostow has laid emphasis on a limited number of leading sectors like textiles, railroads, etc But economic growth has not always been governed by the development of a few lading sectors.
 - (c) **Little Different between the first and Third Condition.** The last condition for take -off is the existence or emergence of a cultural framework which gives to growth an outgoing character. According to Rostow, the necessary condition for this is the 'capacity to mobilize capital, from domestic sources, and this is in fact nothing else but the first condition of take -off restated.
- (5) **The Stage of Drive to Maturity Puzzling and Misleading** .It contains all the features of the take -off - rate of net investment over 10 per cent of national income, development of new production techniques, leading sectors and institutions .Then where lies the need for a separate stage where the growth process becomes self-sustained It can be self-sustained even in the take -off stage. As observed by Kuznets, “no growth is purely self- sustaining or self-limiting. The characterization of one stage of growth as self-sustained and of others, by implication, as liking that property, requires substantive evidence and analysis not provided by Rostow"
- (6) **The Stage of High Mass Consumption not Chronological.** The age of high mass consumption is so defined that certain countries like Australia and Canada have entered this stage before even reaching maturity According to one critic, "the period of a mass-consumption is nothing else but minus its ideological overtone.

3.2The Harrod-Domar Growth Model

The growth model that was particularly popular with economic planners just after World War II came to be known as the Harrod-Domar model, since it was based on independently published articles by Roy Harrod and Evsey Domar. The fact that the two authors independently produced

identical models was not surprising. This is because their models were simple extensions of John Maynard Keynes's well-known macroeconomic model, which dominated economic thinking in the 1940s.

The Harrod-Domar model makes similar assumptions to the Keynesian macroeconomic model. These include:

- ☛ Since there is unlimited amount of unemployed labor, output can be increased without triggering price increases.
- ☛ As there is abundant labor to keep the capital-labor ratio constant, this leads also to the assumption of constant marginal product of capital (capital output ratio).
- ☛ With constant capital-output ratio, therefore, output growth is directly proportional to new investment in new capital.
- ☛ Moreover, this model assumes that productive investment is always equal to saving.

Each model is discussed one by one below.

I. Harrod's Growth Model

As mentioned above, Harrods original model is a dynamic extension of Keynes' static equilibrium analysis. In this regard, there are three questions that Harrod raised and tried to answer. In Keynes' General Theory, the condition for income and output to be in equilibrium (in a closed economy) is that plans to invest equals plans to save. Hence, Harrod asked if changes in income induce investment, what must be the rate of growth of income for plans to invest to equal plans to save in order to ensure a moving equilibrium in a growing economy through time?

Secondly, in static Keynesian theory, if equilibrium between saving and investment is disturbed, the economy corrects itself and a new equilibrium is achieved via the multiplier process. Then the second question is if growth equilibrium is disturbed, will it be self-correcting or self-aggravating? And lastly, will this equilibrium rate be equal to the maximum rate of growth that the economy is able to sustain given the rate of growth of productive capacity? If not what will happen?

To explain this condition, Harrod distinguished three different growth rates.

These are

- ☛ Actual growth rate (g)
- ☛ Warranted growth rate (gw)
- ☛ Natural growth rate (gn)

The actual growth

The actual growth rate is defined as

$$g = \frac{s}{c} \text{-----eqn.1}$$

Where: s = the ratio of saving to incomes (S/Y)

c = the actual incremental capital output ratio, that is the ratio of extra capital accumulation or investment to the growth of output

$$\Delta K / \Delta Y = I / \Delta$$

The expression for the actual growth is definitional true since it expresses the accounting identity that saving equals investment. This can be shown as

$$g = s/c = (S/Y) / (I/\Delta Y)$$

$$= (S/Y) (\Delta Y/I)$$

= $\Delta Y/Y$, given $S=I$ the change over the level ($\Delta Y/Y$) represents the rate of growth of output.

We need more than a definitional equation, however, to know whether the actual growth rate will provide the basis for steady advances in the future. This means that it keeps plans to invest and plans to save in line with one another at full employment. This is where the warranted rate & natural rate of growth become important.

Warranted rate of growth

Warranted rate is that rate of growth which, if it occurs, will leave all parties satisfied. At this rate producers have produced neither more nor less than the right amount. To state matters otherwise, warranted rate of growth will put all parties into a frame of mind which will cause them to give such orders as will maintain the same rate of growth. In other words, it is the rate that induces just enough investment to match planned saving and therefore keeps capital fully employed so that manufacturers are willing to carry on investment in the future at the same rate as in the past. It is determined as:

Plans to save at any time are given by the Keynesian saving function

$$S = sY \text{ -----eqn. 2}$$

The demand for investment is given by the acceleration principle. This is where c_r is the accelerator coefficient measured as the required amount of extra capital or investment to produce a unit flow of output at a given rate of interest, determined by technological condition. Thus

$$C_r = \Delta K_r / \Delta Y = I / \Delta Y$$

$$I = C_r \Delta Y \text{ -----eqn. 3}$$

For planned savings to equal planned investment therefore, we have

$$sY = C_r \Delta Y \text{ -----eqn. 4}$$

And the required rate of growth for a moving equilibrium through time is

$$\Delta Y / Y = s / C_r = g_w \text{ -----eqn. 5}$$

This is the warranted rate of growths (g_w). For dynamic equilibrium, output must grow at this rate. The condition for equilibrium is that

$$g = g_w$$

From eqn. 5 and eqn. 1, this means

$$g_c = g_w c_r$$

$$(g / g_w = c_r / c)$$

Suppose there is disequilibrium such that actual growth rate exceeds the warranted rate. It is easily seen that if $g > g_w$ then $c < c_r$, which means that actual investment falls below the level required to meet the increase in output. There will be a shortage of equipment, a depletion of stocks and an incentive to invest more. The actual growth rate will then depart even further from the warranted rate.

Conversely, if the actual growth rate is less than the warranted growth rate ($g < g_w$) then $c > c_r$. In this case, there will be a surplus of goods and investment will be discouraged, causing the actual growth rate to fall even further below the equilibrium rate.

Thus, as Harrod points out, in the dynamic field we have a condition opposite to that in static field. A departure from equilibrium instead of being self righting will be self-aggravating. This is the short-term trade cycle problem in Harrod's growth model.

But even if growth proceeds at the rate required for full utilization of the capital stock and a moving equilibrium through time, this still does not guarantee the full employment of labor, which depends on the natural rate of growth.

The natural growth rate

The natural growth rate is derived from the identity:

$$Y = L (Y/L)$$

Where L = Labor

$$Y/L = \text{Productivity of labor}$$

Or taking the rate of growth

$$Y = 1 + q$$

The natural rate of growth is therefore made up of two components: the growth of labor force (l), and the growth of labor productivity (q) both exogenously determined. The natural rate of growth plays two roles in Harrods model.

1. It defines the rate of growth of productive capacity or the long run full employment equilibrium growth rate.
2. It sets the upper limit to the actual growth rate. If $g > g_w$, g can only continue to diverge from g_w until it hits g_n . When all available labor has been fully absorbed, g cannot be greater than g_n in the long-run. The long-run question for an economy then is the relationship between g_w and g_n .

With fixed coefficient of production, the full employment of labor requires

$$g = g_n$$

The full employment of labor and capital requires

$$g = g_w = g_n \dots$$

This is a state of affairs, which Jean Robinson called it the **golden age**

Long-Run Disequilibrium

If $g_w > g_n$, there will be a tendency towards chronic depression. This is because the actual rate of growth will never be sufficient to stimulate investment demand to match the amount of saving at full employment equilibrium. There is too much capital and too much saving. This was the problem during the 1930's. Here the economy is in a state of stagnation. Savings are not fully utilized and the economy suffers from over accumulation of capital. This will produce excess capacity, rising inventories and unemployment. Here Harrod suggest reduction of savings, which also reduce g_w .

On the other hand, if $g_w < g_n$, there will be a tendency towards demand inflation because there will be a tendency for the actual rate of growth to exceed that necessary to induce investment to match saving.

Relevance of the Model to Developing Countries

In most developing countries, the natural growth rate exceeds the warranted rate. If the population growth is say 2% and labor productivity is growing at 3%, this gives a rate of growth of the labor force in efficiency units of 5%. If the net savings ratio is, say 9% and the required

incremental capital-output ratio is 3, this gives a warranted growth rate of 3%. This has two main consequences

1. It means that the effective labor force is growing faster than capital accumulation, which is part of the explanation for growing unemployment in LDCs
2. It implies greater plans to invest than plans to save, and therefore resulting inflationary pressure. If $g_n = 5\%$ and $c_r = 3$, there will be profitable investment for 15% saving whereas actual saving is only 9%.

Given the inequality $g_n \neq g_w$ or $(1+q) W (s/c_r)$, Harrod suggested four ways in which g_n and g_w might be reconciled. If the problem is $g_n > g_w$:

- i) Reduce the rate of growth of the labor force. Measures to control population size can be justified on the grounds, as a contribution to solving the problem of unemployment.
- ii) A reduction in the rate of growth of labor productivity would help, but this would of course reduce the growth of living standards of those in work.
- iii) A rise in the saving ratio could narrow the gap. This is at the heart of monetary & fiscal policies in UDCs.
- iv) Reducing the capital-output ratio through the use of more labor intensive techniques.

II. Domar's Model

The American economist Evsey Domar, working independently of Harrod, also arrived at Harrod's central conclusion, although by a slightly different route. A basic principle emphasized by Domar and incorporated in all modern growth theory is the dual effect of net investment. In other words Domar recognized that investment is a double-edged sword: net investment constitutes a demand for output, and it also increases the capacity of the economy to produce output. If the expanded capacity is to be fully utilized, aggregate demand in the next period will have to exceed that of this period. Thus, in general, as long as there is net investment in one period after another, aggregate demand must rise period after period if expanding productive capacity resulting from net investment is to be fully utilized.

Hence, the question that Domar asked is what rate of growth of investment must prevail in order for supply to grow in line with demand (at full employment)? In the words of Domar, if

investment increases both productive capacity and generates income, it provides us with both sides of the equation, the solution of which may give the required rate of growth.

Increase in Capacity Output

The basic theory involves a simple production function that relates the generation of total output to the stock of capital via the **capital-output ratio**. Taking the technique of production as given, some specified amount of capital goods is necessary to produce a given amount of output. If we let 'K' represent the capital stock and Y the level of output, we may define the average capital output ratio as K/Y .

In contrast, the marginal capital output ratio $\Delta K/\Delta Y$ tells us how much additional capital is necessary to produce a specified addition to that flow of output. To simplify the analysis, we assume that the constant $\Delta K/\Delta Y$ equals K/Y so that K/Y is also constant (because technology is constant)

The reciprocal of the average capital-output ratio, Y/K , represents the average productivity of capital. Given an increase in the capital stock, ΔK , $\Delta Y/\Delta K$ indicates the ratio of the increase in output to the increase in capital stock. In the simple model $Y/K = \Delta Y/\Delta K$. This ratio of output to capital stock is designed by δ (sigma), which Domar calls the **“potential social average productivity.”**

Since ΔK in any period equals that period's net investment, I , $\Delta Y/\Delta K = \delta$ may also be expressed as $\Delta Y/I = \delta$ or $\Delta Y = \delta I$. From this it follows that the cumulative net investment of any period increases capacity output by δI . This is the most important relationship in the model.

It must be noted that ΔY is not necessarily the actual, or realized, increase in output but rather the potential increase possible with full utilization of the expanded productive capacity. Since the actual increase need not necessarily equal the potential, let us now distinguish the actual, or realized, increase from the potential by appending subscripts: ΔY_r and ΔY_p .

Increase in Aggregate Demand

In a two-sector economy, aggregate demand equals the sum of consumption and investment expenditures. With a stable consumption function, consumption expenditures will rise only as a

result of a rise in income and therefore a rise in investment expenditure is necessary to initiate a rise in income. Consequently, we may determine the total rise in expenditures, or income that will result from any given rise in investment by using the simple multiplier expression:

$\Delta Y = (1/s) \times (\Delta I)$, where s is marginal propensity to save

This rise in income, or expenditure, is matched by an equal rise in actual output, since, with a stable price level, output responds in proportion to the rise in demand. With subscript 'r' designating realized or actual, we have

$$\Delta Y_r = \Delta I/s$$

The Equilibrium Rate of Growth

There is some rate of growth at which the increase in actual output in each period, ΔY_r , will just equal that period's increase in capacity output, ΔY_p . This rate at which $\Delta Y_r = \Delta Y_p$ is called the Equilibrium Rate of Growth.

To determine equilibrium in a growing economy, Domar starts with the assumption that the economy is at full employment equilibrium. From an original period in which there is equilibrium as given by $Y_r = Y_p$, it follows that if the rate $\Delta Y_r/Y_r$ remains equal to the rate $\Delta Y_p/Y_p$ period after period, Y_r will remain equal to Y_p period after period. In such situation, aggregate realized output grows as fast as aggregate potential output, thereby producing a path of equilibrium growth over time.

Since $\Delta Y_r = \Delta I/s$ and $\Delta Y_p = \delta I$, the equilibrium rate is also that at which $\Delta I/s = \delta I$. The left side shows the increment to aggregate realized output for the period, since this is equal to the increment of aggregate demand, it may be called the demand side. The right side shows the increment to productive capacity for the period and as such may be called the supply side. On the right side of the equation, we find not the change in net investment for the period but the total net investment for the period. The reason of course is that total net investment for the period times the average productivity of capital determines the change in productive capacity. Thus Domar's fundamental equation is

$$\Delta I/s = \delta I \text{ multiplied by } s \text{ yields}$$

$\Delta I = s\delta I$ then, dividing by I

$$\Delta I / I = s\delta$$

The left side of the equation now gives the required rate of growth of net investment. If actual output is to rise as fast as potential output, the growth rate of net investment must be $s\delta$, or the propensity to save multiplied by the productivity of capital.

Although ΔI is subject to a multiplier that makes ΔY greater than ΔI , we can see that the growth rate of actual output, $\Delta Y_r / Y_r$ must be the same as the growth rate of investment, $\Delta I / I$. Since in equilibrium $\Delta Y_r = \Delta Y_p$ and since $\Delta Y_p = \delta I$, it follows that $\Delta Y_r = \delta I$. Furthermore, since $I = sY$ in equilibrium, then by substitution $\Delta Y = s\delta Y$ and $\Delta Y / Y = s\delta$ Therefore;

$$\Delta I / I = \Delta Y / Y = s\delta$$

The rate at which actual output and investment must grow in order that actual output remains equal to potential output is determined by the propensity to save and the productivity of capital. If $\delta = 1/cr$ (at full employment), then the Domar result for equilibrium will be

$$\Delta I / I = s/cr$$

Which is, the same as Harrod's result for equilibrium growth.

Similarities and differences between Harrod and Domar Models

Similarities

- ☛ Both models have studied the requirement of steady growth with reference to developed countries
- ☛ Assumptions of both models are similar
- ☛ Investment or capital accumulation has a central place in both models in the problem of economic growth
- ☛ According to both approaches given the capital output ratio so long as $APS = MPS$ the equality of saving and investment satisfies the conditions of equilibrium rate of growth

- ☛ The Harrod model suggests that for an economy to be constantly at equilibrium, it should grow at g_w . In Domar's model full employment rate of growth is δs . Harrods g_w is similar to Domar's δs and Domar's δ is the reciprocal of Harrods c_r

Differences

- ☛ Harrod uses incremental capital output ratio and the accelerator to build up his model. But Domar relies on incremental output capital ratio (i.e inverse of incremental capital output ratio) and multiplier to formulate his model
- ☛ Harrod assumes certain behavioral pattern for entrepreneurs and deduce that it induces investment. In Domar's model, no such behavioral pattern has been assumed. He thinks that proper change in investment comes exogenously.
- ☛ For Harrod, business cycle is an integral part of the growth process. Domar, however, accommodates fluctuations by allowing δ to fluctuate.
- ☛ The causal relationship between investment and income is reverse in both models. Harrod says that investment is C_r multiplied by changes in income. According to him income first changes and investment adjusts to it. Thus, income is the active factor in the model. Domar says that investment multiplied by accelerator is equal to increase in income. Thus investment is the active factor in Domar's model. In his exposition, investment first increases and income resulting from it is a δ time the investment.

Criticisms of Harrod-Domar (H-D) Model

- ☛ Fixed coefficient production function: The H-D model assumes that labor and capital are used in fixed proportions. However, this is untenable. The capital labor ratio changes with the changes in factor prices, i.e. one factor is substituted for another factor. Hence, we cannot ignore substitution of inputs. But H-D model does not allow such substitutability
- ☛ Constant assumptions: The H-D model is also criticized for its unrealistic assumptions. It assumes that interest rate and prices are constant. it also assumes that the marginal propensity to save ($APS=MPS$) and capital output ratio are constants. But in reality, they are likely to change in the long run. As economies develop MPS will be higher. A steady

rate of growth can, however, be maintained without these assumptions. Domar himself admitted this and said that the whole problem can be easily reworked with variable α and δ .

- ☛ The effect of technological progress has not been incorporated in both the models. These models have been derived from the examination of industrial society at a particular point in trade cycle of economic activity.
- ☛ Both models ignore human capital formation
- ☛ The two models also fail to consider changes in the general price level. Price changes always occur overtime and may stabilize otherwise unstable situations.

3.3 THE SOLOW GROWTH MODEL

The Accumulation of Capital

The Solow growth model is designed to show how **growth in the capital stock, growth in the labor force, and advances in technology** interact in an economy, and how they affect a nation's total output of goods and services. We build this model in steps. Our first step is to examine how the supply and demand for goods determines the accumulation of capital. In this first step, we assume that the labor force and technology are fixed. We then relax these assumptions by introducing changes in the labor force later on and by introducing changes in technology in the next.

The Supply and Demand for Goods

The supply and demand for goods played a central role in Solow model. By considering the supply and demand for goods, we can see what determines how much output is produced at any given time and how this output is allocated among alternative uses.

The Supply of Goods and the Production Function: The supply of goods in the Solow model is based on the now-familiar production function, which states that output depends on the capital stock and the labor force:

$$Y = F(K, L)$$

The Solow growth model assumes that the production function has ***constant returns to scale***. This assumption is often considered realistic, and as we will see shortly, it helps simplify the analysis. Recall that a production function has ***constant returns to scale*** if

$$zY = F(zK, zL)$$

for any positive number z . That is, if we multiply both capital and labor by z , we also multiply the amount of output by z . Production functions with constant returns to scale allow us to analyze all quantities in the economy relative to the size of the labor force. To see that this is true, set $z = 1/L$ in the preceding equation to obtain

$$\frac{Y}{L} = F\left(\frac{K}{L}, 1\right)$$

This equation shows that the amount of output per worker Y/L is a function of the amount of capital per worker K/L . (The number “1” is, of course, constant and thus can be ignored.) The assumption of constant returns to scale implies that the size of the economy—as measured by the number of workers—does not affect the relationship between output per worker and capital per worker.

Because the size of the economy does not matter, it will prove convenient to denote all quantities in per-worker terms. We designate these with lowercase letters, so $y = Y/L$ is output per worker, and $k = K/L$ is capital per worker. We can then write the production function as

$$y = f(k)$$

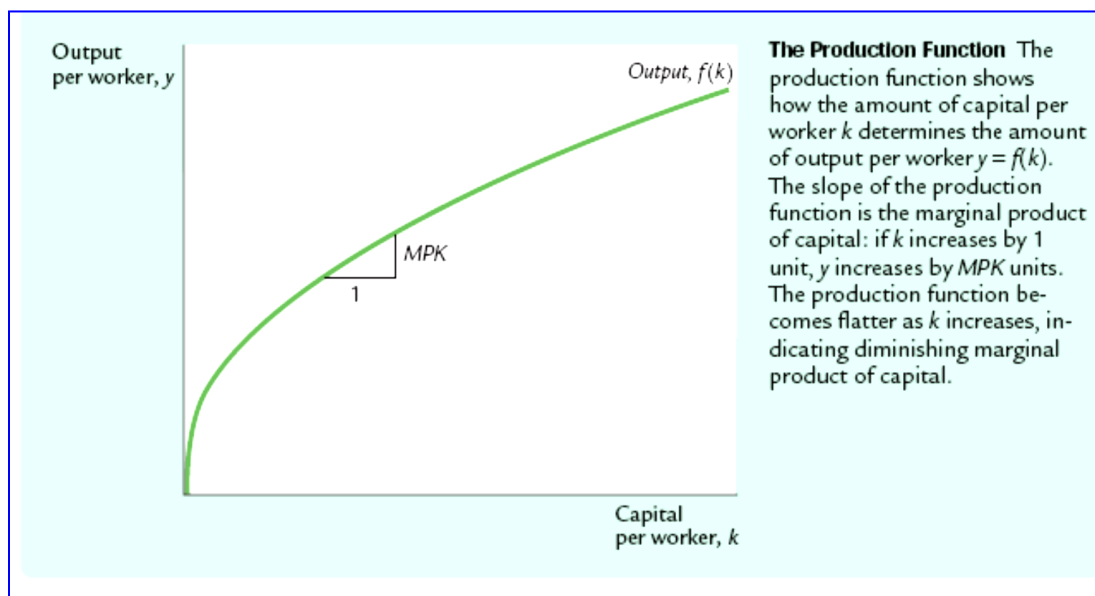
Where we define $f(k) = F(k, 1)$. Figure 3.2 illustrates this production function. The slope of this production function shows how much extra output a worker produces when given an extra unit of capital. This amount is the marginal product of capital MPK. Mathematically, we write

$$MPK = f(k + 1) - f(k)$$

Note that in Figure 3.2 as the amount of capital increases, the production function becomes flatter, indicating that the production function exhibits diminishing marginal product of capital. When k is low, the average worker has only a little capital to work with, so an extra unit of

capital is very useful and produces a lot of additional output. When k is high, the average worker has a lot of capital, so an extra unit increases production only slightly.

Figure 3.2 Production Function



The Demand for Goods and the Consumption Function: The demand for goods in the Solow model comes from consumption and investment. In other words, output per worker y is divided between consumption per worker c and investment per worker i :

$$y = c + i$$

This equation is the per-worker version of the national income accounts identity for an economy. Notice that it omits government purchases (which for present purposes we can ignore) and net exports (because we are assuming a closed economy). The Solow model assumes that each year people save a fraction s of their income and consume a fraction $(1 - s)$. We can express this idea with a consumption function with the simple form

$$c = (1 - s)y$$

where s , the saving rate, is a number between zero and one. Keep in mind that various government policies can potentially influence a nation's saving rate, so one of our goals is to find what saving rate is desirable. For now, however, we just take the saving rate s as given.

To see what this consumption function implies for investment, substitute $(1 - s)y$ for c in the national income accounts identity:

$$y = (1 - s)y + i$$

Rearrange the terms to obtain

$$i = sy$$

This equation shows that investment equals saving, thus, the rate of saving s is also the fraction of output devoted to investment.

We have now introduced the two main ingredients of the Solow model-the production function and the consumption function-which describe the economy at any moment in time. For any given capital stock k , the production function $y = f(k)$ determines how much output the economy produces, and the saving rate s determines the allocation of that output between consumption and investment.

Growth in the Capital Stock and the Steady State

At any moment, the capital stock is a key determinant of the economy's output, but the capital stock can change over time, and those changes can lead to economic growth. In particular, two forces influence the capital stock: investment and depreciation. Investment refers to the expenditure on new plant and equipment, and it causes the capital stock to rise. Depreciation refers to the wearing out of old capital, and it causes the capital stock to fall. Let's consider each of these in turn. As we have already noted, investment per worker i equals sy . By substituting the production function for y , we can express investment per worker as a function of the capital stock per worker:

$$i = sf(k)$$

This equation relates the existing stock of capital k to the accumulation of new capital i . Figure 3.3 shows this relationship. This figure illustrates how, for any value of k , the amount of output is determined by the production function $f(k)$, and the allocation of that output between consumption and saving is determined by the saving rate s .

Figure 3.3 Relationships b/n existing stock of capital k to the accumulation of new capital

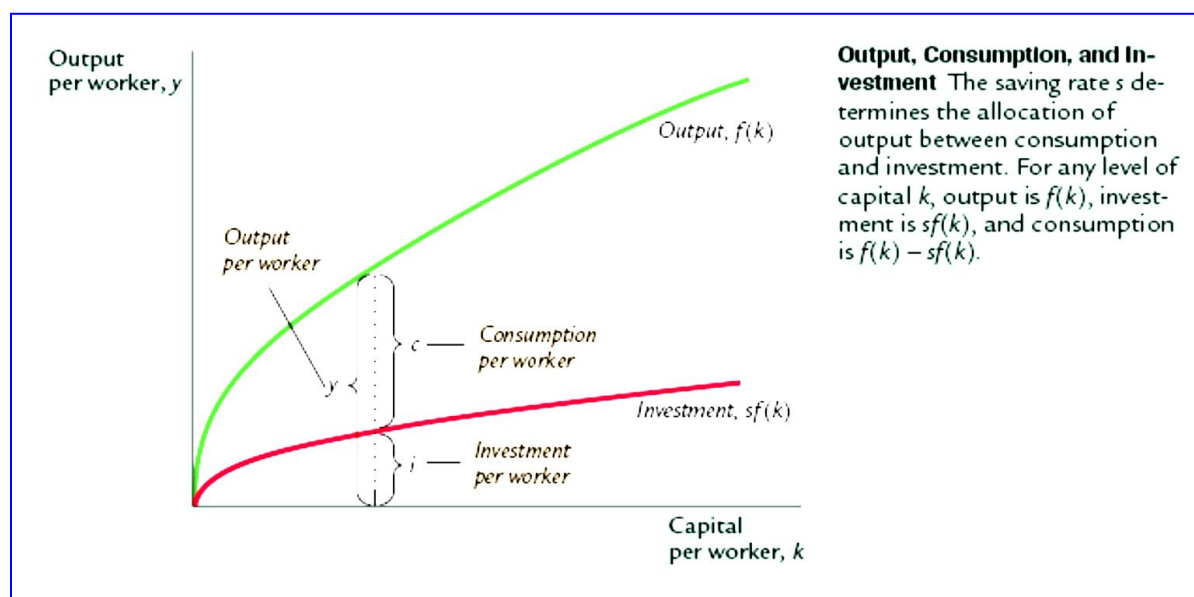
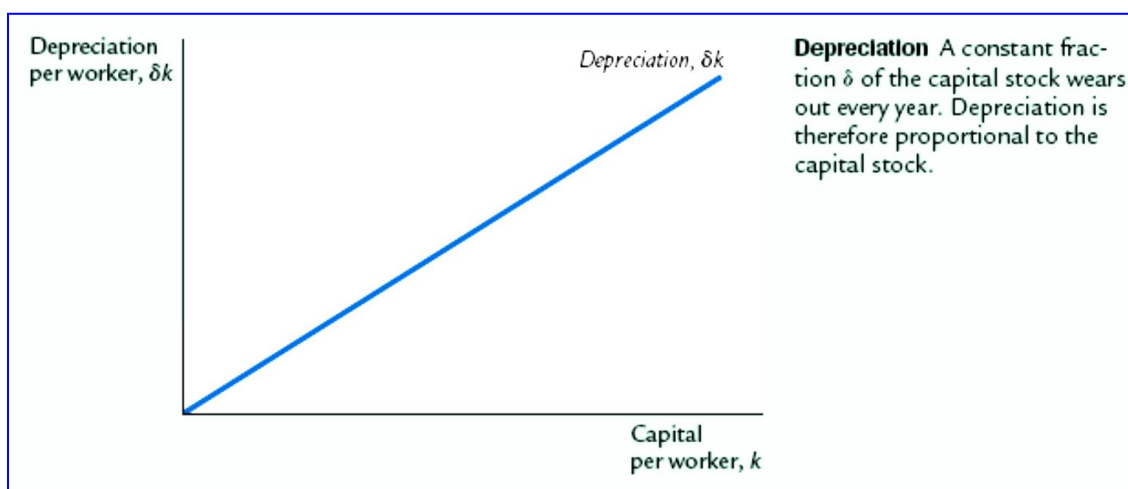


Figure 3.4 depreciation and Capital stock



To incorporate depreciation into the model, we assume that a certain fraction δ of the capital stock wears out each year. Here δ (the lowercase Greek letter delta) is called the depreciation rate. For example, if capital lasts an average of 25 years, then the depreciation rate is 4 percent per year ($\delta = 0.04$). The amount of capital that depreciates each year is δk . Figure 3.4 shows how the amount of depreciation depends on the capital stock. We can express the impact of investment and depreciation on the capital stock with this equation:

$$\text{Change in Capital Stock} = \text{Investment} - \text{Depreciation}$$

$$\Delta k = i - \delta k$$

Where, δk is the change in the capital stock between one year and the next. Because investment i equals $sf(k)$, we can write this as

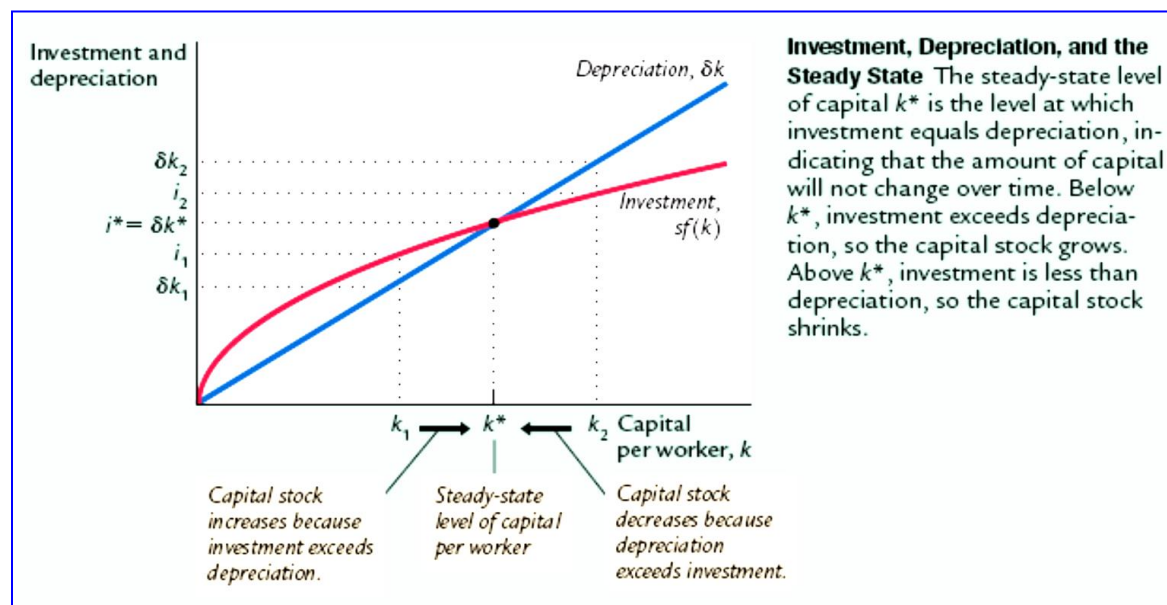
$$\Delta k = sf(k) - \delta k$$

Figure 3.5 graphs the terms of this equation—investment and depreciation—for different levels of the capital stock k . The higher the capital stock the greater the amounts of output and investment. Yet the higher the capital stock the greater also the amount of depreciation.

As Figure 3.5 shows, there is a single capital stock k^* at which the amount of investment equals the amount of depreciation. If the economy ever finds itself at this level of the capital stock, the capital stock will not change because the two forces acting on it—investment and depreciation—just balance. That is, at k^* ,

$\Delta k = 0$, so the capital stock k and output $f(k)$ are steady over time (rather than growing or shrinking). *We therefore call k^* the steady-state level of capital.*

The steady state is significant for two reasons. As we have just seen, an economy at the steady state will stay there. In addition, and just as important, an economy not at the steady state will go there. That is, regardless of the level of capital with which the economy begins, it ends up with the steady-state level of capital. In this sense, the steady state represents the **long-run equilibrium of the economy**.

Figure 3.5 Investment Depreciation and the steady state

To see why an economy always ends up at the steady state, suppose that the economy starts with less than the steady-state level of capital, such as level k_1 in Figure 3.5. In this case, the level of investment exceeds the amount of depreciation.

Over time, the capital stock will rise and will continue to rise—along with output $f(k)$ —until it approaches the steady state k^* . Similarly, suppose that the economy starts with more than the steady-state level of capital, such as level k_2 . In this case, investment is less than depreciation: capital is wearing out faster than it is being replaced. The capital stock will fall, again approaching the steady-state level. Once the capital stock reaches the steady state, investment equals depreciation, and there is no pressure for the capital stock to either increase or decrease.

A Numerical Example

Let's use a numerical example to see how the Solow model works and how the economy approaches the steady state. For this example, we assume that the production function is

$$Y = K^{0.5}L^{0.5}$$

To derive the per-worker production function $f(k)$, divide both sides of the production function by the labor force L :

$$\frac{Y}{L} = \frac{K^{0.5}L^{0.5}}{L}$$

Rearrange to obtain

$$\frac{Y}{L} = \left(\frac{K}{L}\right)^{0.5}$$

Because $y = Y/L$ and $k = K/L$, this becomes

$$y = k^{0.5}$$

This equation can also be written as

$$y = \sqrt{k}$$

This form of the production function states that output per worker is equal to the square root of the amount of capital per worker.

To complete the example, let's assume that 30 percent of output is saved ($s=0.3$), that 10 percent of the capital stock depreciates every year ($\delta = 0.1$), and that the economy starts off with 4 units of capital per worker ($k = 4$). Given these numbers, we can now examine what happens to this economy over time.

This equation provides a way of finding the steady-state level of capital per worker, k^* . Substituting in the numbers and production function from our example, we obtain

$$\frac{k^*}{\sqrt{k^*}} = \frac{0.3}{0.1}$$

Now square both sides of this equation to find

$$k^* = 9$$

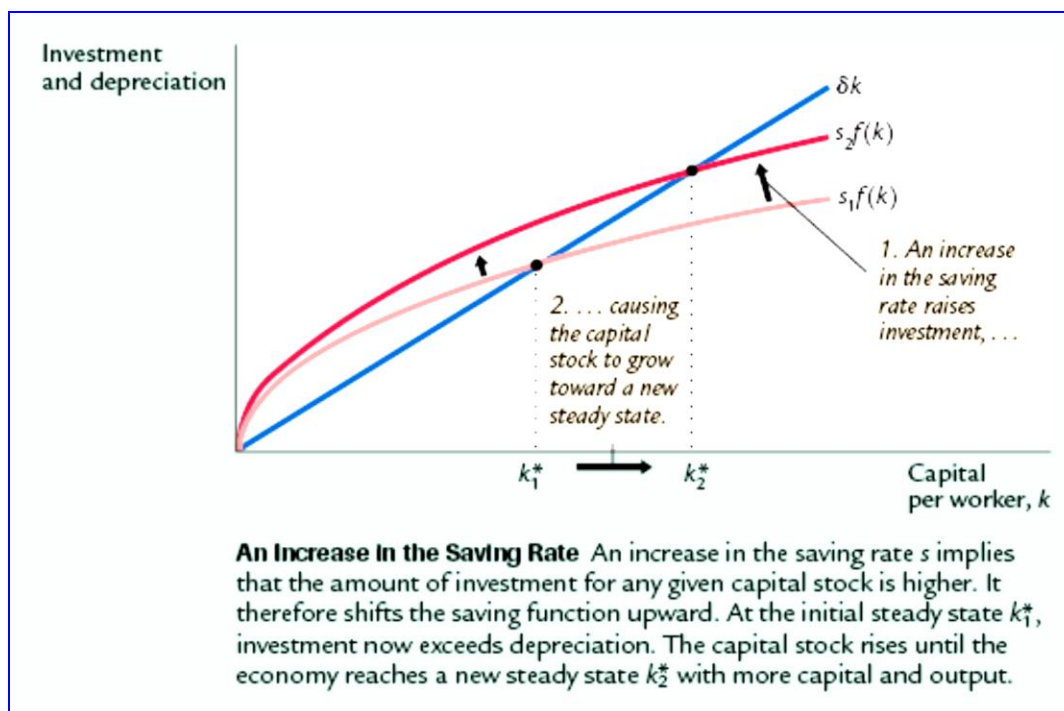
How Saving Affects Growth

To understand more fully the international differences in economic performance, we must consider the effects of different saving rates. Consider what happens to an economy when its saving rate increases. Figure 3.6 shows such a change. The economy is assumed to begin in a steady state with saving rate s_1 and capital stock k^*_1 . When the saving rate increases from s_1 to s_2 , the $sf(k)$ curve shifts upward. At the initial saving rate s_1 and the initial capital stock k^*_1 , the amount of investment just offsets the amount of depreciation. Immediately after the saving rate rises, investment is higher, but the capital stock and depreciation are unchanged. Therefore, investment exceeds depreciation. The capital stock will gradually rise until the economy reaches the new steady state k^*_2 , which has a higher capital stock and a higher level of output than the old steady state.

The Solow model shows that the saving rate is a key determinant of the steady-state capital stock. If the saving rate is high, the economy will have a large capital stock and a high level of output. If the saving rate is low, the economy will have a small capital stock and a low level of output. This conclusion sheds light on many discussions of fiscal policy. As we now, a government budget deficit can reduce national saving and crowd out investment. Now we can see that the long-run consequences of a reduced saving rate are a lower capital stock and lower national income. This is why many economists are critical of persistent budget deficits. What does the Solow model say about the relationship between saving and economic growth? Higher saving leads to faster growth in the Solow model, but only temporarily. An increase in the rate of saving raises growth only until the economy reaches the new steady state. If the economy maintains a high saving rate, it will maintain a large capital stock and a high level of output, but it will not maintain a high rate of growth forever.

Now that we understand how saving affects growth, we can more fully explain the impressive economic performances of Germany and Japan after World War II. Not only was their initial capital stocks low because of the war, but their steady state capital stocks were high because of their high saving rates. Both of these facts help explain the rapid growth of these two countries in the 1950s and 1960s.

Figure 3.6 an Increase in Investment



The Golden Rule Level of Capital

So far, we have used the Solow model to examine how an economy's rate of saving and investment determines its steady-state levels of capital and income. This analysis might lead you to think that higher saving is always a good thing, for it always leads to greater income. Yet suppose a nation had a saving rate of 100 percent. That would lead to the largest possible capital stock and the largest possible income. But if all of this income is saved and none is ever consumed, what good is it?

This section uses the Solow model to discuss what amount of capital accumulation is optimal from the standpoint of economic well-being. In the next chapter, we discuss how government policies influence a nation's saving rate. But first, in this section, we present the theory behind these policy decisions.

Comparing Steady States

To keep our analysis simple, let's assume that a policymaker can set the economy's saving rate at any level. By setting the saving rate, the policymaker determines the economy's steady state. What steady state should the policymaker choose?

When choosing a steady state, the policymaker's goal is to maximize the wellbeing of the individuals who make up the society. Individuals themselves do not care about the amount of capital in the economy, or even the amount of output.

They care about the amount of goods and services they can consume. Thus, a benevolent policymaker would want to choose the steady state with the highest level of consumption. The steady-state value of k that maximizes consumption is called the **Golden Rule level of capital** and is denoted k^*_{gold} .

How can we tell whether an economy is at the Golden Rule level? To answer this question, we must first determine steady-state consumption per worker. Then we can see which steady state provides the most consumption.

To find steady-state consumption per worker, we begin with the national income accounts identity

$$y = c + i$$

And rearrange it as

$$c = y - i$$

Consumption is simply output minus investment. Because we want to find steady-state consumption, we substitute steady-state values for output and investment. Steady-state output per worker is $f(k^*)$, where k^* is the steady-state capital stock per worker. Furthermore, because the capital stock is not changing in the steady state, investment is equal to depreciation δk^* . Substituting $f(k^*)$ for y and δk^* for i , we can write steady-state consumption per worker as

$$c^* = f(k^*) - \delta k^*$$

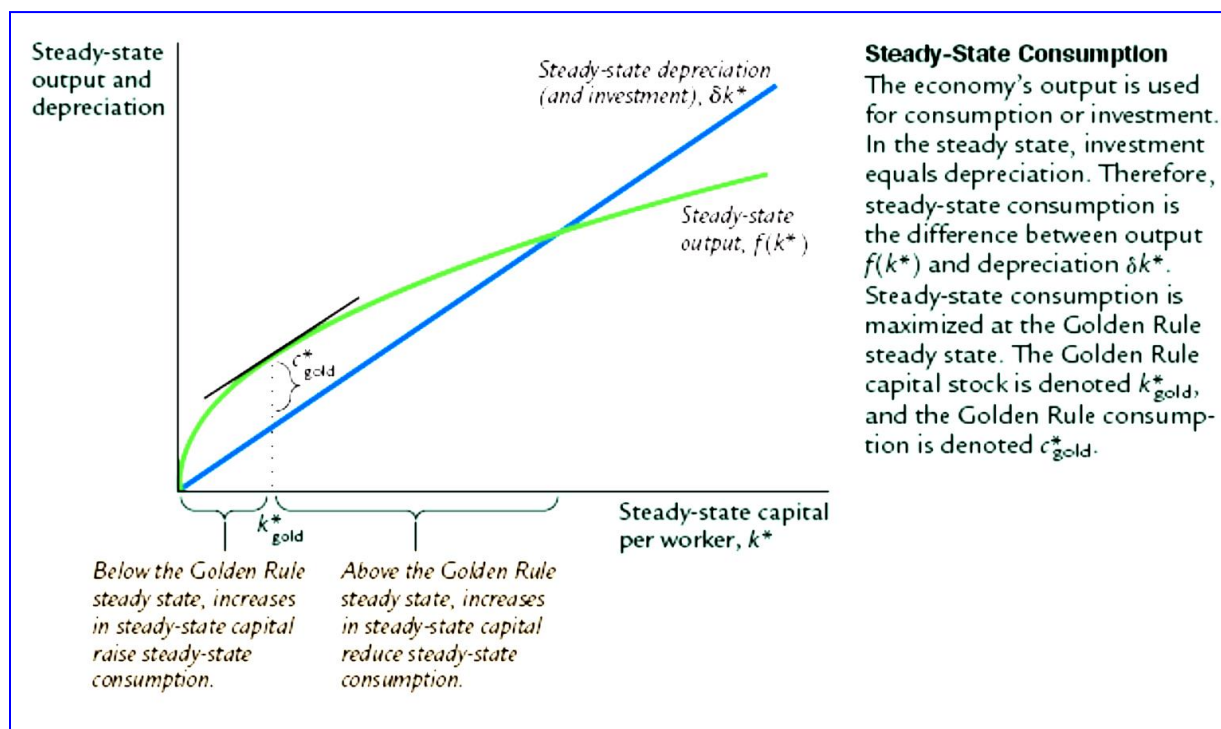
According to this equation, steady-state consumption is what's left of steady-state output after paying for steady-state depreciation. This equation shows that an increase in steady-state capital has two opposing effects on steady-state consumption. On the one hand, more capital means more output. On the other hand, more capital also means that more output must be used to replace capital that is wearing out.

Figure 3.7 graphs steady-state output and steady-state depreciation as a function of the steady-state capital stock. Steady-state consumption is the gap between output and depreciation. This figure shows that there is one level of the capital stock—the Golden Rule level k^*_{gold} —that maximizes consumption. When comparing steady states, we must keep in mind that higher level of capital affects both output and depreciation. If the capital stock is below the Golden Rule level, an increase in the capital stock raises output more than depreciation, so that consumption rises. In this case, the production function is steeper than the δk^* line, so the gap between these two curves—which equals consumption—grows as k^* rises. By contrast, if the capital stock is above the Golden Rule level, an increase in the capital stock reduces consumption, since the increase in output is smaller than the increase in depreciation. In this case, the production function is flatter than the δk^* line, so the gap between the curves—consumption—shrinks as k^* rises. At the Golden Rule level of capital, the production function and the δk^* line have the same slope, and consumption is at its greatest level.

We can now derive a simple condition that characterizes the Golden Rule level of capital. Recall that the slope of the production function is the marginal product of capital MPK . The slope of the δk^* line is δ . Because these two slopes are equal at k^*_{gold} , the Golden Rule is described by the equation

$$MPK = \delta$$

At the Golden Rule level of capital, the marginal product of capital equals the depreciation rate.

Figure 3.7 Steady State consumption.

To make the point somewhat differently, suppose that the economy starts at some steady-state capital stock k^* and that the policymaker is considering increasing the capital stock to $k^* + 1$. The amount of extra output from this increase in capital would be $f(k^* + 1) - f(k^*)$, which is the marginal product of capital MPK . The amount of extra depreciation from having 1 more unit of capital is the depreciation rate δ . Thus, the net effect of this extra unit of capital on consumption is $MPK - \delta$. If $MPK - \delta > 0$, then increases in capital increase consumption, so k^* must be below the Golden Rule level. If $MPK - \delta < 0$, then increases in capital decrease consumption, so k^* must be above the Golden Rule level. Therefore, the following condition describes the Golden Rule:

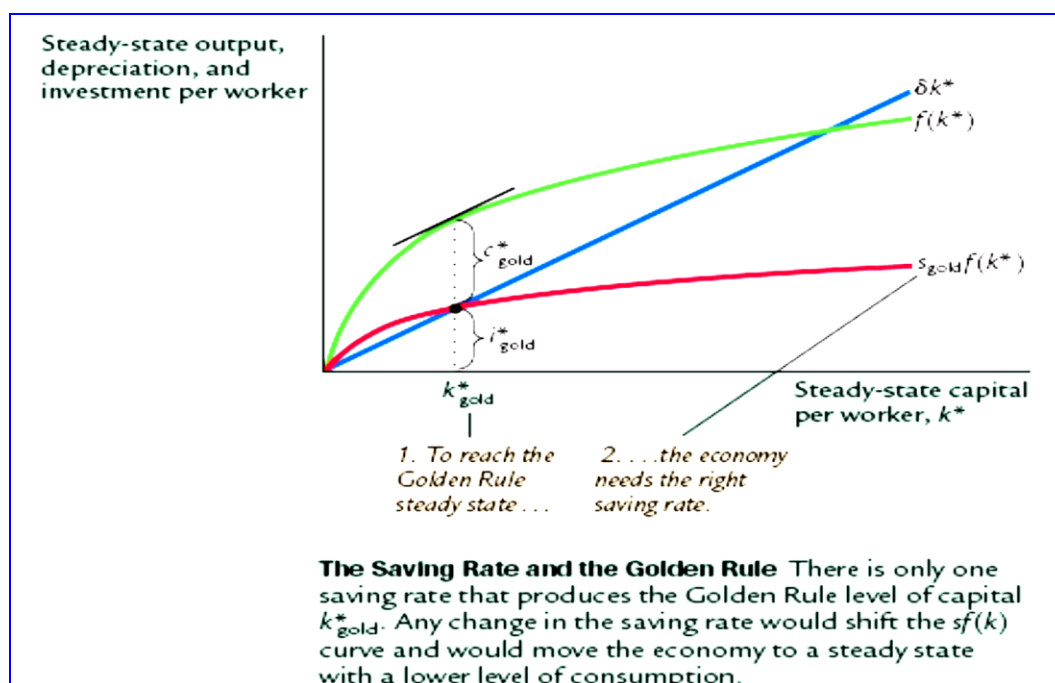
$$MPK - \delta = 0$$

At the Golden Rule level of capital, the marginal product of capital net of depreciation

$(MPK - \delta)$ equals zero. As we will see, a policymaker can use this condition to find the Golden Rule capital stock for an economy. Keep in mind that the economy does not automatically

gravitate toward the Golden Rule steady state. If we want any particular steady-state capital stock, such as the Golden Rule, we need a particular saving rate to support it. Figure 3-8 shows the steady state if the saving rate is set to produce the Golden Rule level of capital. If the saving rate is higher than the one used in this figure, the steady state capital stock will be too high. If the saving rate is lower, the steady-state capital stock will be too low. In either case, steady-state consumption will be lower than it is at the Golden Rule steady state.

Figure 3.8 the saving rate and the Golden rule



The Effect of Population Growth

The basic Solow model shows that capital accumulation, by itself, cannot explain sustained economic growth: high rates of saving lead to high growth temporarily, but the economy eventually approaches a steady state in which capital and output are constant. To explain the sustained economic growth that we observe in most parts of the world, we must expand the Solow model to incorporate the other two sources of economic growth—population growth and technological progress. In this section we add population growth to the model. Instead of assuming that the population is fixed, we now suppose that the population and the labor force grow at a constant rate n .

The Steady State with Population Growth

How does population growth affect the steady state? To answer this question, we must discuss how population growth, along with investment and depreciation, influences the accumulation of capital per worker. As we noted before, investment raises the capital stock, and depreciation reduces it. But now there is a third force acting to change the amount of capital per worker: the growth in the number of workers causes capital per worker to fall. We continue to let lowercase letters stand for quantities per worker. Thus, $k = K/L$ is capital per worker, and $y = Y/L$ is output per worker. Keep in mind, however, that the number of workers is growing over time. The change in the capital stock per worker is

$$\Delta k = i - (\delta + n)k$$

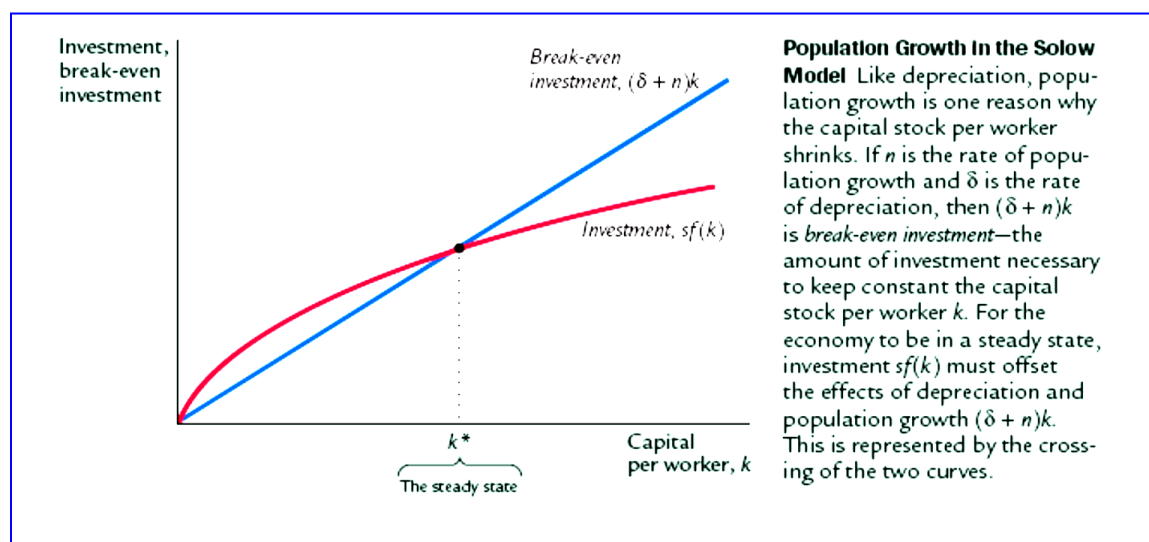
This equation shows how investment, depreciation, and population growth influence the per-worker capital stock. Investment increases k , whereas depreciation and population growth decrease k . We saw this equation earlier in this chapter for the special case of a constant population ($n = 0$). We can think of the term $(\delta + n)k$ as defining break-even investment—the amount of investment necessary to keep the capital stock per worker constant. Break-even investment includes the depreciation of existing capital, which equals δk . It also includes the amount of investment necessary to provide new workers with capital.

The amount of investment necessary for this purpose is nk , because there are n new workers for each existing worker, and because k is the amount of capital for each worker. The equation shows that population growth reduces the accumulation of capital per worker much the way depreciation does. Depreciation reduces k by wearing out the capital stock, whereas population growth reduces k by spreading the capital stock more thinly among a larger population of workers.

Our analysis with population growth now proceeds much as it did previously. First, we substitute $sf(k)$ for i . The equation can then be written as

$$\Delta k = sf(k) - (\delta + n)k$$

Figure 3.9 population growth and Solow model



To see what determines the steady-state level of capital per worker, we use Figure 3.9, which extends the analysis of Figure 3.5 to include the effects of population growth. An economy is in a steady state if capital per worker k is unchanging.

As before, we designate the steady-state value of k as k^* . If k is less than k^* , investment is greater than break-even investment, so k rises. If k is greater than k^* , investment is less than break-even investment, so k falls. In the steady state, the positive effect of investment on the capital stock per worker exactly balances the negative effects of depreciation and population growth. That is, at k^* , $\delta k = 0$ and $i^* = \delta k^* + nk^*$. Once the economy is in the steady state, investment has two purposes. Some of it (δk^*) replaces the depreciated capital, and the rest (nk^*) provides the new workers with the steady-state amount of capital

3.4 SURPLUS LABOR THEORY

Professors W. Arthur Lewis has developed a very systematic theory of Economic Development with Unlimited Supplies of Labor: Like the classical economists, he believes that in many underdeveloped countries an **unlimited supply of labor is available at a subsistence wage**.

Economic development takes place when capital accumulates as a result of the withdrawal of surplus labor from the "subsistence" sector to the "capitalist" sector. The capitalist sector is that part of the economy which uses reproducible capital and pays capitalists for the use thereof. It employs labor for wages in mines, factories, and plantations for earning Profits. The subsistence sector is that part of the economy which does not use reproducible capital. In this sector, output per head is lower than in the capitalist sector.

Lewis starts his theory with the assertion that the classical theory of perfectly elastic supply of labor at a subsistence wage holds true in the case of a number of underdeveloped countries. Such economies are over populated relatively to capital and natural resources so that ***the marginal productivity of labor is negligible, zero or even negative.*** Since the supply of labor is unlimited, new industries can be established or existing industries expanded without limit at the current wage by drawing upon labor from the subsistence sector. The current wage is what labor earns in subsistence sector i.e. subsistence wage. The main source from which workers would be coming for employment at the subsistence wage as economic development proceeds are "the casuals, the petty traders, the retainers (domestic and commercial) women in the household and population growth. But the capitalist sector also needs skilled workers. Lewis argues that skilled labor is only a ***"quasi bottleneck" a temporary bottleneck*** - which can be removed by providing training facilities to unskilled workers

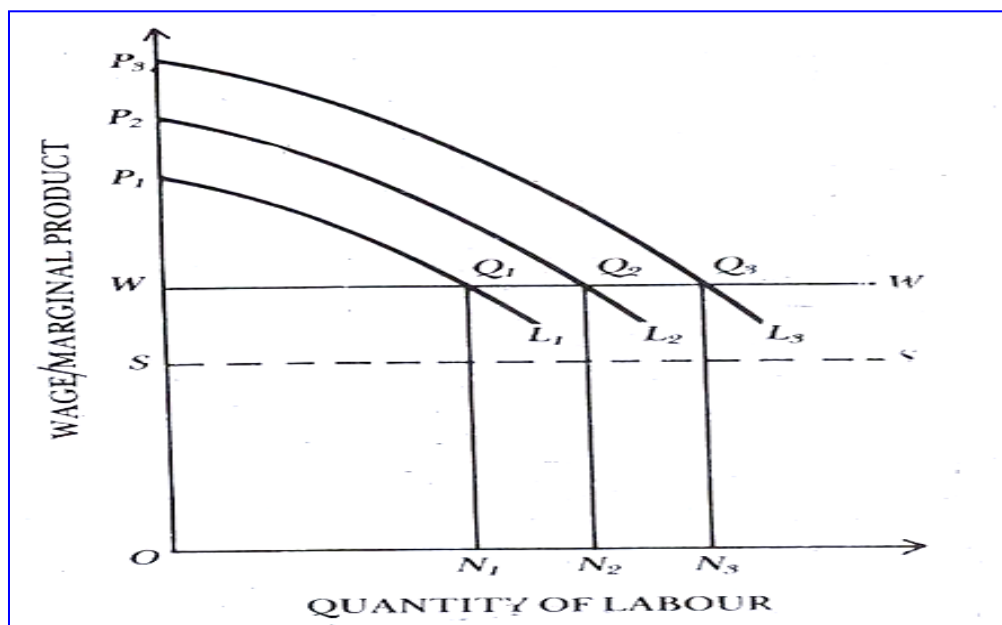
Now the question is what determines the subsistence wage at which the surplus labor is available for employment in the capitalist sector? It depends upon the minimum earnings required for subsistence. To be precise, the wage level cannot be less than the average product of the worker in the subsistence sector. It may however, be higher than this, if the farmers are to pay rent or food cost more or if they feel that psychic disutility of leaving home are large. Though "earnings in the subsistence sector set a floor to wage in the capitalists sector," yet in the fact capitalist wages are more than 30 percent higher than subsistence wages due to

- a) a substantial increase in the subsistence sector which by reusing real income might induce workers to ask for a higher capitalist wage before offering themselves for employment

- b) if with the withdrawal of labor from the subsistence sector total product remains the same, the average product and hence the real income of those remaining behind will rise and the withdrawn workers might insist on a higher wage in the capitalist sector,
- c) The high cost of living and some humanitarian consideration may move the employers to raise the real wage, or governments may encourage trade unions and support their wage bargaining efforts. The supply of labor is, however, considered to be perfectly elastic at the existing capitalist wage.

Capital Formation Depends on Capitalist Surplus: Capitalist aims at profit maximization. It is they who save and automatically invest what they save. Since the marginal productivity of labor in the capitalist sector is higher than the capitalist wage, this results in capitalist surplus. This surplus is reinvested in new capital formation, which takes place and more people are employed from the subsistence sector. This process continues till the capital-labor ratio rises and the supply of labor becomes inelastic and the surplus labor disappears. Thus capital formation depends on the capitalist surplus. The Lewis theory can be explained with help of the following graph.

Figure 3.10 Lewis model



The horizontal axis wage in the subsistence sector and OW the capitalist wage. At OW wage in the supply of labor is unlimited, as shown by the horizontal supply curve of labor ww . In the beginning when ON_1 labor is employed in the capitalist sector the marginal productivity curve is P_1L_1 and the total output of this sector is $OP_1Q_1N_1$. Out of this, workers are paid wages equal to the area OWQ_1N_1 . The remaining area WP_1Q_1 shows surplus outputs. This is the capitalist surplus or total profit earned by the capitalist sector. When this surplus is reinvested, the curve of marginal productivity shifts upwards to P_2L_2 . The capitalist surplus and employment are now larger than before being WP_2Q_2 and ON_2 respectively. Further reinvestments raise the marginal productivity curve and the level of employment to P_3L_3 and ON_3 and so on, till the entire surplus labor is absorbed in the capitalist sector. After this, the supply curve, and employment will continue to rise with development.

Thus, capital is formed out of profits earned by the capitalists. According to Lewis, if technical progress is capital-saving it may be considered as an increment in the marginal productivity of labor. As such, he does not make any distinction between the growth of technical knowledge and the growth of productive capital and treats them as a "single phenomenon" with the result that technical progress tends to raise profits and increase employment in the capitalist sector.

Role of the State and private Capitalists: The central problem in the theory of economic development, according to Lewis, is to understand the process by which a community which was previously saving and investing 4 or 5 per cent of its national income or less converts itself into an economy where voluntary saving is running at about 12 to 15 per cent of national income or more. This is the central problem because the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital).

In underdeveloped countries with surplus labor, only 10 per cent of the people with the largest income save who receive about 40 per cent of the national income. The wage and salaries hardly save 3 per cent of the national income. But the dominant classes consisting of landlords, traders, moneylenders, priests, soldiers, prince are engaged in prodigal consumption rather than in productive investment. It is, therefore, the state capitalist and indigenous private capitalists who create capital out of profits earned. The indigenous private capitalist is bound up with the emergence of new opportunities, especially something that widens the productivity of labor, and hence the capital even faster than the private capitalist, since he can use for this purpose not only

the profits of subsistence sector. Thus, once a capitalist sector has emerged it is only a matter of time before it becomes sizable. If the opportunities it for using capital productivity increase rapidly the surplus will also grow rapidly and the capitalist class with it.

Capital Formation through Bank credit: But capital is created not only out of profits; it is also created out of bank credit in an underdeveloped economy which has abundant idle resources and shortage of capital. Credit creation has the same effect on capital formation as profits. It will raise output and employment. Credit-financed capital formation, however, leads to inflationary rise in prices for some time When the surplus labor is engaged in the capitalist sector and paid out of credited money, prices rise because income increases while consumer- goods output remains constant. This is only a temporary phenomenon, for as soon as capital goods start producing consumption goods, prices start as capital goods prices start falling. In the words of Lewis, "Inflation for the purpose of capital formation is a very different kettle of fish. It is self-destructive. Prices begin to rise but are sooner or later overtaken by rising output, and may in the last stage, end up lower than they were at the beginning. The inflationary process also comes to an end" when voluntary savings increase to a level where they are equal to the inflated level of investment

End of the growth Process: The theory shows that "if unlimited supplies of labour are available at a constant real wage and if any part of profits is reinvested in productive capacity, profits will grow continuously relatively to the national income and capital formation. But the process of growth cannot go on indefinitely, if as a result of capital accumulation no surplus labour is left. It may also stop, if despite the existence of surplus labour, real wages rise so high as to reduce the capitalist profits to the level where they are all consumed and nothing is left for net investment .This may happen in any of the four ways

if the capitalist sector expands so rapidly that it reduces absolutely the population is the subsistence sector , the average productivity of labour rises in the latter sector because there are very few people to share the product and so the capitalist wage rises in the former sector (in the diagram SS and WW will shift upwards and reduce profits)

if as a result of the expansion of the capitalist sector relatively to the subsistence sector, the terms of trade turn against the former with rising prices of raw materials and food, the capitalists will have higher wages to the workers

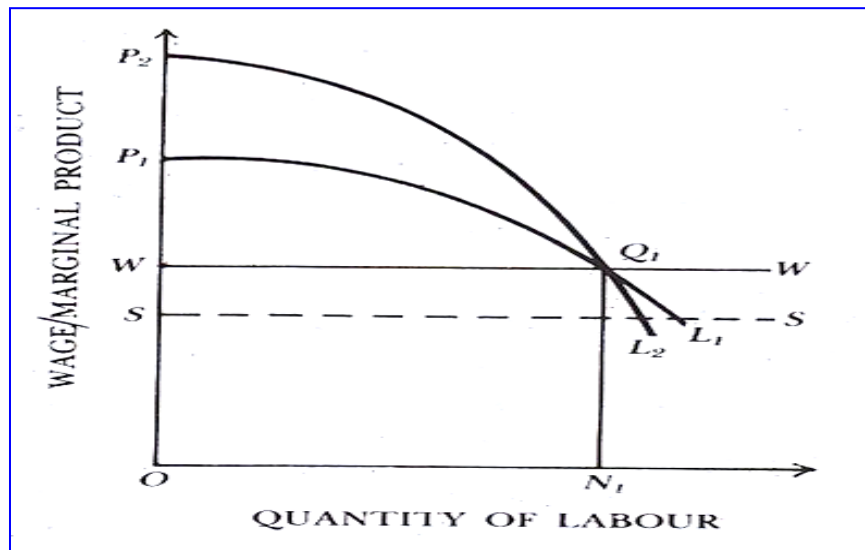
if the subsistence sector adopts new techniques of production real wages would rise in the capitalist sector and so reduce the capitalist surplus, and lastly, if the workers in the capitalist way of life, and agitate for higher wages and if successful in raising their wages, the capitalist surplus and the rate of capital formation will be reduced.

Criticism of Lewis Theory

The Lewis theory is applicable to overpopulated underdeveloped countries under certain set conditions. Its applicability is, therefore circumscribed by its assumptions which are the bases of criticisms discussed below:

1. **Wage Rate not Constant in the capitalist Sector:** The theory assumes a constant wage rate in the capitalist sector until the supply of labour is exhausted from the subsistence sector. This is unrealistic because the wage rate continues to rise over time in the industrial sector of an under-developed economy even when there is open un-employment in its rural sector.
2. **Not Applicable if Capital Accumulation is Labour Saving:** Lewis assumes that the capitalist surplus is reinvested in productive capital. But According to Reynolds, if the productive capital happens to be labour saving it would not absorb and heathery breaks down. This is shown in Fig.3.11 where the curve P_2L_2 has a greater negative slope than the curve P_1L_1 there by showing labour saving technique With the shifting of the marginal productivity curve upward from P_1L_1 to P_2L_2 the total output has risen substantially from $OP_1Q_1N_1$ to $OP_2Q_1N_1$ But the total wage bill OWQ_1N_1 and the labour employed ON_1 remain unchanged.

Figure 3.11 Critics of Lewis model



3. **Skilled Labour not a Temporary Bottleneck:** Given an unlimited supply of labour, Lewis assumes the existence of unskilled labour for his theory. Skilled labour is regarded as a temporary bottleneck which can be removed by provide training facilities to unskilled labour. No doubt is short supply in underdeveloped countries but skill- formation poses a serious problem, as it takes a very long time to educate and train the multitude in such countries.
4. **Lack of Enterprise and Initiative:** The Lewis theory is based on the assumption that a capitalist class exists in under developed countries. In fact, the entire process of growth depends on the existence of such a class which has the necessary skill to accumulate capital.
5. **Multiplier Process does not operate in LDC:** Again the theory assumes that capital accumulation takes when the capitalist class continues to reinvest profits. It therefore, presupposes the operation of the "investment multiplier" which is not applicable to underdeveloped countries. for if profit are reduced somehow or the price of wage goods rise, the process of capital formation will stop before all the surplus labour is absorbed
6. **One side Theory:** This is a one-sided theory because Lewis does not consider the possibility of progress in the agricultural sector. As the industrial sector develops with the transfer of surplus labour, the demand for food and raw materials will rise which will in turn lead to the growth of the agricultural sector.
7. **Neglects Total Demand:** Lewis dose not study the problem of aggregate demand. He assumes that whatever is produced in the capitalist sector is either consumed by itself or is

exported. He does not even analyze the possibility of the capitalist sector selling its products to the subsistence sector. In case, it so happens, the growth process may come to a halt much earlier through unfavorable terms of trade or the subsistence raw material demand of the capitalist sector.

8. **Mobility of Labour not so Easy:** Higher capitalist wage will not lead to the movement of surplus labour from the subsistence sector to the capitalist sector. People are so intensely attached to their family and land that they do not like to leave their kith and kin. Moreover, differences in language and custom, the problems of congestion, housing and high cost of living in the capitalist sector stand in the way of mobility of labour to this sector. This is the main weakness of the theory.
9. **Marginal productivity of Labour not Zero:** Economists do not agree that the marginal productivity of labour in overpopulated under- developed countries is zero or negligible. If it were so the subsistence wage would also be zero. The fact is that every worker receives the subsistence wage may be in kind if not in cash. It is therefore, difficult to find out the exact number of surplus laborers who are to move to the capitalist sector, their number hardly exceeding 5 per cent, as is now generally accepted
10. **Productivity falls with Migration of Labour from the Subsistence Sector:** Lewis assumes that when the surplus labour is withdrawn from the subsistence sector to the capitalist sector, the agricultural production remains unaffected in the subsistence sector But the fact is that withdrawal of workers from the farms will reduce output As, pointed out by Schultz "there is no evidence for any poor country anywhere that would suggest that a transfer of even some fraction, say, 5 per cent of the existing labour-force out of agriculture, with other things equal could be made without reducing its production"
11. **Low Income Groups also Save:** It is not correct to say that only 10 per cent of the people with the largest income save In fact people with low incomes also save due to social reasons and even small farmers save for capital accumulation in underdeveloped countries, whereas high income groups save less because they spend more under the influence of the **demonstration effect**.
12. **Inflation not Self-Destructive:** Lewis's view that inflation for the purpose of capital formation is **self-destructive** is difficult to believe in the face of acute shortage of consumer goods. Production of consumer goods fails to increase rapidly due to structural rigidities. On

the other hand the marginal propensity to consume of the people is near unity(one) ,so that all increases in income lead to inflationary rise in prices

3.5 THE BIG PUSH THEORY

The theory of big push is associated with the name of Paul N. Rosentern Rodan. The theory says that a big push or a large comprehensive program is needed in the form of a high minimum amount of investment to overcome the obstacles for development in UDCs. According to him, launching a country into self sustaining growth is a little like lifting an airplane off the ground. There is a critical ground speed which must be passed before the air craft can become air borne. The theory states that proceeding bit-by-bit investment program will not lead the economy successfully through the development path. For sustained development, a minimum amount of investment is necessary. Rodom distinguished three types of indivisibilities and external economies.

I. Indivisibilities in the Production Function

Rosentein Rodan stated that indivisibility of inputs, outputs or processes of production lead to increasing returns. Increasing returns play a significant role in lowering the capital output ratio. The services of social overhead capital (SOC) or indirectly productive activity play a significant role in this regard. SOC has a long gestation period, a minimum durability, they are lumpy, and it is irreversible in time. Therefore, it must precede the directly productive activity (DPA).

II. Indivisibilities of Demand

The indivisibility or complementarities of demand requires a simultaneous setting up of interdependent industries in UDCs. Rosenstein Rodan used his famous example of shoe factory to explain his view point. If the entire investment is made only in one industry, lack of demand may result in overproduction. If instead the investment is made in different industries at the same time, complementarities of demand reduces the risk of finding a market and increases the incentive to invest. In short, a minimum quantum of investment in interdependent industries is essential to overcome the market imperfections.

III. Indivisibilities in the Supply of Saving

A high income elasticity of saving is the third indivisibility in Rodan's theory. A high minimum size of investment requires a high volume of savings. It is difficult to achieve it in a poor country because of low income. To overcome this, when income increases due to an increase in investment, the marginal rate of savings should be much higher than the average rate of savings. According to this theory, high investment leads to high level of employment, increased income, and increased saving which again leads to increased investment. Thus an initial investment is a precondition for saving.

Criticism of "Big Push" Theory

Professor Rosenstein Ronda his theory to development superior to the traditional static equilibrium theory. The theory is however, not free certain defects

- ☛ **Negligible Economies from Investment in Export and Import Substitutes.** The main justification for "big push" in investment on social overhead capital is the realization extensive external economies. But underdeveloped economies realize greater economies from world trend independently of home investment.
- ☛ **Negligible Economies even from Cost-Reducing Investment:** Even in the production of local consumer goods and most public utilities potential external economies can be realized in a limited way Investments in the case of fairly inelastic demand are cost-reducing rather than output -expanding Since external economies accrue from the output -expansion in the initial industry, they are negligible in the case of cost-reducing investment.
- ☛ **Neglects Investment in the Agricultural Sector:** One of the principle defects of the "big push" theory is that it emphasizes the importance of a high level of investment in all types of industries- capital goods, consumer goods and social overhead capital-except the agricultural and other primary industries. In agriculture oriented underdeveloped countries a big Push of large investment in irrigation, transportations, facilities land reforms, and in improving agricultural practice through better tools implements, fertilizers, etc are as important as investment in other industries. The neglect of the agricultural sector in such economies will retard rather than accelerate their development.

- ☛ **Generates Inflationary Pressure:** Even the Launching of high minimum amount of investment on social overheads is highly expensive. Moreover, overhead capital has a high capital-output ratio and a very long gestation period. This makes the task of developing LDCs more difficult and longer. This is because such countries do not possess enough financial resources to provide social overhead capital required for the “big push”.
- ☛ **Low Investment Leads to Large Increase in Output:** Statistical analysis of the economic development of the world reveals that "a relatively low level of investment 'pays off well in the form of additional output ". This conclusion is based on study of low capital-output ratios in India, Pakistan and in many other Asian and Latin American countries"
- ☛ **Administrative and Institutional Difficulties:** Further the “Big Push” theory is based upon a burst of state - engineered investment. Rosenstein himself points out that in the presence of imperfectly developed markets in underdeveloped countries the price mechanism is a very poor signaling system. But the administrative and investment itself poses a number of problems. The administrative and institutional machinery in such economies is weak and inefficient. Difficulties are bound to arise not only in drawing up the plans for various projects but also in their execution. Lack of statistical information, technical know-how, trained personnel and coordination between the various departments are some of the complex problems which are not easy for solution. Moreover, the majority of underdeveloped countries have a mixed economy, where the private and public sectors are mostly competitive rather than complementary. This leads to mutual rivalry and suspicion which are inimical to a balanced growth of the economy.

3.6 THE DOCTRINE OF BALANCED GROWTH

Meaning

The doctrine of balanced growth has several authors who interpret it in their own way. To some it means investing in a laggard sector or industry so as to bring it abreast of others. To others, it implies that investment takes place simultaneously in all sectors or industries at once. Still to others, it means balanced development of manufacturing industries and agriculture.

Balanced growth therefore requires balance between different consumer goods industries, and between consumer goods and capital goods industries. It also implies balance between industry and agriculture and between the domestic and export sector. Further, it entails balance between social and economic overheads and directly productive investments, and between vertical and horizontal external economies. In fine, the theory of balanced growth states that there should be simultaneous and harmonious development of different sectors of the economy so that all sectors grow in unison.

For this, balance is required between the demand and supply sides. **The supply side** lays emphasis on the simultaneous development of all inter-related sectors which help in increasing the supply of goods. It includes the simultaneous and harmonious development of intermediate goods, raw materials, power, agriculture, irrigation, transportation and all industries producing consumer goods.

On the other hand **the demand side** relates to the provision for larger employment opportunities and increasing incomes so that the demand for goods and services may rise on the part of the people. The demand side is related to supplementary industries, consumer goods industries, especially agriculture and manufacture. When with the simultaneous setting up of all types of industries large number of people are employed, they create demand for each other's goods. In this way all goods will be sold out. This theory has been advocated by Rosenstein Rodan, Ragnar Nurkse, and Arthur Lewis. Let us examine the concept in detail.

Explanation of the Theory: Rosenstein- Rodan was the first economist who propounded the theory of balanced growth without using these words in his 1943 article. He argued that the whole of the industry to be created in eastern and south-eastern Europe should be treated and planned like one huge firm. His main contention is that "often SMP (Social Marginal Product) of an investment is different from its PMP (Private Marginal Product) and that when a group of industries is planned together in accordance with their SMPs; the rate of growth of the economy is greater than it would have been otherwise. This is because **an individual entrepreneur is interested only in the PMP of investment** and is not likely to have an accurate assessment of its SMP. In support of his argument Rosenstein-Rodan gives a number of examples **where the SMP of an investment is greater than its PMP**. It is **complementarily of different industries** which lead to the most profitable investment from the standpoint of the society.

Let us see with example: Suppose a large shoe factory is started in a region where 20,000 unemployed workers are employed. If these workers spent all their wages on shoes, a market for shoes would be created. But the trouble is that the workers will not spend all their wages on shoes. If instead, a whole series of industries were started which produce the consumption goods on which workers would spend all their income all the consumption would expand via the multiplier process. The planned creation of not being able to sell their products and would lead to a large scale planned industrialization. This very idea has been developed and elaborated by Ragnar Nurkse

According to Nurkse Vicious Circles of Poverty are at work in underdeveloped countries which retard economic development. If however, they are broken, economic development will follow. The vicious circles operate both on the supply side and the demand side.

On the supply side: there is the small capacity to save resulting from Low real income. The low real income is due to low productivity which in turn is due to deficiency of capital. The deficiency of capital is the result of low capacity to save on the demand side inducement to invest is low because of low demand which is due to low level of real income of the people. The inducement to invest is, therefore, limited by the size of the market which in turn depends upon productivity, because "the capacity to buy is in fact the capacity to produce and productivity depends on the amount of capital used in production But for an individual entrepreneur the use of capital is inhibited by the small size of the market which in turn is limited by low productivity. Thus the vicious circle is complete.

How to Break these Circles? Individual investment decision cannot solve the problem. Let us go back to the famous example of the shoe factory to substantiate this argument. Suppose, a shoe industry is set up If in the rest of the economy nothing is done to increase productivity and purchasing power, the market for the industry will not likely to spend all their income on shoes, human wants being diverse. Nor will the people outside the new industry buy a pair of shoes every year when they do not have enough to meet their bare necessities. Thus, the new industry is likely to fail for want of the adequate market.

How Can the Market be enlarged? The size of the market can be enlarged by monetary expansion, by salesmanship and advertizing, by abolishing trade restrictions and by expanding

the economic infrastructure. It can also be widened either by a **reduction in prices (money incomes remaining constant) or by an increase in money incomes while keeping prices constant**. This implies increase in productive efficiency and in real income. But in underdeveloped countries market is not large enough to permit production on a scale that may lead to reduction in costs. Moreover, inelastic consumer demand, technical discontinuities and lack of enterprise keep down the demand for capital

Therefore, the only way out of this impasse, according to Nurkse is “more *or less* **synchronized application of capital to a wide range of different industries**. Here is an escape from the deadlock; here the result is an over- all enlargement of the market. People working with more and better tools in a number of complementary projects become each others' customers. Most industries catering for mass consumption are complementary. But a substantial use of capital by an individual entrepreneur in any particular industry may be unprofitable due to a wide range of projects in different industries may raise the general level of economic efficiency and enlarge the size of the market. A frontal attack of this sort-a wave of capital investment in a number of different industries - has been called by Nurkse **Balanced growth**.

The way to do this is by a simultaneous wave of new plants composed in such a way that full advantage is taken of complementariness and external economies on the supply side and of the complementariness of markets on the demand side horizontal interaction of industries, a better division of labor, a common source of raw materials and technical skill, an expansion of the size of the market and better utilization of social and economic overhead capital. Investment in productive equipment and in human capital should be simultaneous, for investment in the former would be useless unless people are **educated and healthy** to operate it. Private enterprise in an underdeveloped country is incapable of taking the advantage of these external economies because of its incapacity to start a wave of capital investment on a wide range of project.

The Doctrine of Balanced Growth requires a balance between different sectors of the economy during the process of economic growth .There should be proper balance between investment in agriculture and industry. **Agriculture and industry are complementary.**_An increase in industrial output requires an expansion of agricultural output. If employment increases in the demand for foodstuffs, supplies of food must, therefore, be raised. Similarly supplies of raw materials should also rise with the expansion of the industrial sector. It is imperative that the

agricultural sector must also develop along with the industrial sector otherwise inflation will set in.

A balance is also required between the **domestic sector and the foreign sector**, "Export revenue is an important source for financing development; imports rise as production and employment expand; and domestic trade itself requires increasing imports of necessary materials and equipment. To pay for these rising imports, and to allow exports to finance development as much as possible, the country cannot expand its domestic trade at the expense of its foreign trade. **The domestic sector must grow in balance with the foreign sector.**"

To sum up in the words of Lewis," In development processes all sectors of the economy should grow simultaneously, so as to keep a proper balance between industry and agriculture and between production for home consumption and production for export.

Criticism of the Doctrine of Balanced Growth

The doctrine of balanced growth has been severally criticized by Hirschman, Singer, Urinary and others on the following grounds;

1. **Rise in Costs:** Simultaneous establishment of a number of industries is likely to raise money and real costs of production, and so make them economically unprofitable to operate in the absence of sufficient capital equipment, skills, cheap power, finance and other necessary raw materials.
2. **No Attention to Reducing Costs:** Kindle Berger observes that instead of starting with new industries, Nurse's theory does not consider the possibility of cost reduction in existing industries.
3. **Other problems:** Granted that it is within the competence of an underdeveloped country to establish new industries; a number of other problems are likely to arise. When the new industries are established, the demand for the products of the existing firms will decrease and make them unprofitable. At the same time the demand for factors of production in all industries.
4. **Fails as a Theory of Development:** According to Hirschman the doctrine of balanced growth fails as a theory of development. Development implies the process of change of one type of economy into another more advanced type. But the doctrine of balanced growth would

involve the superimposition of an entirely new self-contained modern industrial sector upon the stagnant and equally self-contained traditional sector.

5. ***Beyond the Capabilities of underdeveloped Countries:*** Again, according to Hirschman, the doctrine "combines a defeatist attitude towards the capabilities of undeveloped economies with completely unrealistic underdeveloped economies with expectations about their creative abilities." On the one hand, officials in underdeveloped countries lament that the necessary skill and other resources for development are lacking in the economy.
6. ***Disproportional in Factors:*** Another problem in underdeveloped countries is the disproportional in the factors of production. In some countries, labor is in abundance but capital and entrepreneurial skill are scarce. While in others, labor and capital are scarce but other resources are in abundance. This is a great hindrance to the practical application of the concept to balanced growth
7. ***Shortage of Resources:*** The doctrine fails to solve the problem of the shortage of resources. It is based on Say's Law that supply creates its own demand. But supply of goods refers to be the demand for factors especially for capital which does not create its own supply. When investments are being made simultaneously in a number of new industries, the demand for factors would become competitive. But the supply of factors is inelastic in underdeveloped countries, thus the main argument of the theory breaks down.
8. ***Wrong Assumption of Increasing Returns:*** The doctrine of balanced growth pre-supposes the need for balanced investment to provide a growing demand, and the existence of increasing returns. But these two forces pull in opposite directions. If returns increase considerably, an under developed country would not like to invest in a railway line and a roadway between the same point, and it will have to choose, for instance, between an oil refinery and a steel mill. If simultaneous investments are made in all related field the appearance of bottlenecks of raw materials, prices, factor shortages, etc., will lead to ***decreasing returns***. The decreasing and not increasing returns favor balanced growth.
9. ***Capital Lumpiness not Essential for Development:*** Although capital "lumpiness" of many social and economic overheads is often given as a reason for investing large sums of money immediately, yet the experience of many developed countries suggests that many services can be provided initially at low investment costs. For example, there are other ways of generating electricity than by damming a big river; diesel- generating sets or thermal plants

can be installed. If capital is extremely scarce, a low investment- low cost technique with a quick fruition lag is more economical.

10. **Balanced Growth not Essential for Induced Investment:** According to Kurihara, "Balanced growth is not, to be desired to induce private investment but to be desired for its own sake, as far as an underdeveloped country is concerted. Nurkse's complaints about an underdeveloped economy's restricted markets and low real income tending to inhibit the private inducement to invest would be unnecessary if autonomous public investment of a capacity increasing as well as income generating nature was allowed to play a greater role."
11. **Concept of Balanced Growth Applicable to Developed Countries:** Further, the balanced growth doctrine is in fact the application of Keynesian underemployment situation to an underdeveloped economy. According to the Keynesian theory, simultaneous multiple development during the upswing of the trade cycle can lead to a balanced recovery of economic activity "for the industries, machines managers, and workers as well as consumption habits are all there only waiting to resume their temporarily suspended functions and roles." But in an under- developed economy this is not so whether the State lends a helping hand or not. Because in such economies there is not temporary suspension of economic activity. Economic activity is static. Capital, skills, factor supplies and economic infrastructure are woefully lacking. It is; therefore, wrong to apply a theory applicable to a developed economy on an underdeveloped economy.

3.7 THE CONCEPT OF UNBALANCED GROWTH

The theory of unbalanced growth is the **opposite of the doctrine of balanced growth**. According to this concept, investment should be made in selected sectors rather than **simultaneously in all sectors of the economy**. No underdeveloped country possesses capital and other resources in such qualities as to invest simultaneously in all sectors. Therefore, investment should be made in a few selected sectors or industries for their rapid development, and the economies accruing from them can be utilized for the development of other sectors. Thus the economy gradually moves from the path of unbalanced growth to that of balanced growth. Economists like Singer, Kindle Berger, Streeten, etc., have expressed their views in favor of the unbalanced growth doctrine. It is, however, **Hirschman** who has propounded the doctrine of unbalanced growth in a systematic manner.

The concept of **'unbalanced growth'** has been popularized by Hirschman. It is his contention that deliberate unbalancing the economy, according to a pre-designed strategy, is the best way to achieve economic growth in an underdeveloped country. According to Hirschman, investments in strategically selected industries or sectors of the economy will lead to new investment opportunities and so pave the way to further economic development. He maintains that "development has of course proceeded in this way, with growth being communicated for the leading sectors of the economy to the followers, from one industry to another, from one firm to another. He regards development as a **"chain of disequilibria"** that must keep alive rather than eliminate the disequilibria, of which profits and losses are symptoms in a competitive economy. If the economy is to be kept moving ahead, the task of **development policy is to maintain tensions, disproportions and disequilibria.**

According to Hirschman when new projects are started they appropriate external economies that can be exploited by subsequent ones. There are some projects that appropriate more external economies than they create which he calls convergent series of investments. Hirschman also calls them induced investments for they are net beneficiaries of external economies. There are other projects too that create more external economies than they appropriate which he characterizes as divergent series of investments. From the point of view of the economy divergent series of investments may have greater social desirability than private profit ability. Whereas induced investments maybe less desirable from the social viewpoint. In practice development policy should aim at

- I. The prevention of convergent series of investments which appropriate more external economies than they create ;and
- II. The promotion of divergent series in which more economies are created than are appropriated possible by investing either in social overhead capital (SOC) or in directly productive activities (DPA).

The first creates external economies while the latter appropriates external economies.

Unbalancing the Economy with SOC: Social overhead capital has been defined as comprising those basic services without which: primary, secondary and tertiary productive activities cannot function. In SOC are included investments on education, public health, communications,

transportation and conventional public utilities like light, water, power irrigation and drainage schemes etc.

A large investment in SOC will encourage private investment later in Directly Productive Activities (DPA). For example, cheaper supply of electric power may encourage the establishment of small industries. SOC investments indirectly subsidize: agriculture, industry or commerce, by cheapening various inputs which they use or by reducing their costs. Unless SOC investments provide cheap or improved services, private investments in DPA will not be encouraged. Thus the SOC approach to economic development is to unbalance the economy so that subsequently investments in DPA are stimulated. As Hirschman puts it investment in SOC is advocated **not because of its direct effect** on final output but because it permits and in fact incites DPA to come in. Some SOC investment is required as a prerequisite of DPA investment.

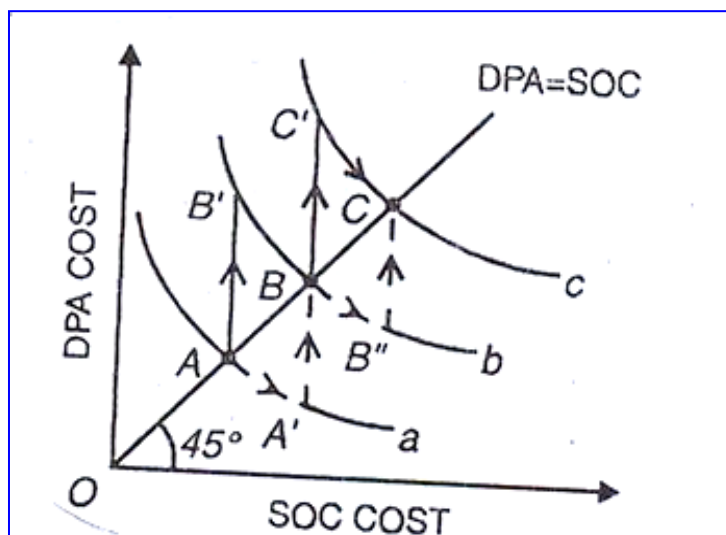
Unbalancing the Economy with DPA: An imbalance can also be created via DPA. A government might directly or indirectly invest in DPA instead of investing in SOC. If DPA investment is undertaken first the shortage of SOC facilities is likely to raise production costs substantially. In course of time political pressure stimulates SOC also. Investment sequences are generated by profit expectations and political pressures. Profit expectations generate the sequence from SOC to DPA and political pressures from DPA.

The Path to Development

Hirschman calls the first sequence (from SOC to DPA); development via excess capacity of SOC; and the second sequence (from DPA to SOC) development via shortage of SOC. As to which sequence should be followed. First for economic development we will follow the sequence which is vigorously self – propelling. This can be explained with the help of the following diagram.

DPA investments are measured along the vertical axis. The curves a, b and c are isoquant 'showing various quantities of DPA and SOC which will give the same gross national product at any point. As we move to a higher curve it represents a higher gross national product. The curves are so drawn that the 45° line through the origin connects the optimal points on the different curves. This line shows the balanced growth of SOC and DPA.

Figure 3.13 unbalanced growths



Hirschman makes two assumptions; **firstly** that SOC and DPA cannot be expanded simultaneously. And **secondly** that sequence of expansion should be adopted which maximizes induced, decision making. If the path to development is followed via excess capacity of SOC the economy will follow the dotted line AA'BB''C when the economy increases SOC from A to A' on the same isoquant a, the induced DPA increases from A to B' until balance is restored on B where the whole economy is on a higher isoquant b. The higher gross national product thus achieved induces government to increase SOC further to B'', DPA also follows suit from B to point C via C' on higher Isoquant c.

If the other path to development via shortage of SOC is followed the economy moves along the thick line AB'BC'C. when DPA increases to B' from A. SOC has to move to A' and then to B. When DPA is increased further to C' from B, balances SOC to increase to C via B''

It is to be noted that development path via excess SOC capacity is more continuous and smooth than the second path. It is in a way what Hirschman calls “self-propelling.” The other path via SOC shortage capacity is not so. Because it is a belted adjustment of SOC as it is likely to be the absence of political pressures in the beginning, the DPA cost of producing a given output rises. According to Hirschman, “Development via SOC shortage is an instance of the disorderly compulsive ‘sequence while via excess SOC capacity is essentially permissive”

Criticism of the Doctrine of Unbalanced Growth

The doctrine of unbalanced growth as propounded by Hirschman is a heroic attempt at pointing out the way to accelerate economical development for underdeveloped countries. It is realistic and takes in to, account almost all aspects of development planning. The doctrine of unbalanced growth is, however, not free from certain limitations.

- ☛ **Inadequate Attention to the composition, Direction and Timing of Unbalanced Growth:** Economists ask, “The crucial question is not whether to create imbalance, what is the optimum degree of imbalance, where to imbalance and how much in order to accelerate growth; which are the growing points; where should the spearhead be thrust. That inadequate attention has been paid to the composition, direction and timing of unbalanced growth.
- ☛ **Neglects Resistances:** Straiten points out that “the theory concentrates on stimuli to expansion and tends to neglect or minimize resistances caused by unbalanced growth.” For instance Hirschman neglects resistances in attitudes created by an imbalance .When development is the outcome of deliberate unbalancing the economy the business attitudes change due to shortages and tensions ,and there is lot of opposition and hostility .
- ☛ **Beyond the capabilities of underdeveloped countries:** Hirschman’s criticism of the doctrine of balanced growth that it “combines a defeatist attitude toward the capabilities of undeveloped economies with completely unrealistic expectations about their creative abilities “applies equally to his own theory. Investment creates imbalances thereby creating pressures and tensions in the growth process, which are overcome by the inducement mechanism. But pressures and tensions are bound to be serious in underdeveloped countries thereby hampering the process of development.
- ☛ **Lack of Facilities.** There May be lots of difficulties in procuring technical personnel, raw materials and basic facilities like power and transport and even in finding out an adequate domestic or foreign market for the products .
- ☛ **Lack of Factor Mobility.** Moreover, inducement mechanism is practicable Where there is internal flexibility of resources .But in underdeveloped countries it is difficult, may impossible, to shift resources from one sector to another.

- ☛ **Emergence of Inflationary pressures.** one of the serious limitations of the unbalanced growth doctrine is the development of inflationary pressure within the economy .When large doses of investment are being injected into the economy at certain strategic points ,income will rise which may tend to increase the demand for consumer goods relative **to** their supply . Shortages arise due to strains, pressures and tensions. Such a situation leads to inflationary rise in the price level. It becomes difficult to control prices in underdeveloped countries, as the governments are incapable of wielding monetary and fiscal measures effectively.
- ☛ **Too much Emphasis on Investment** Decisions .Hirschman's development strategy is largely related to maximizing investment decisions .No doubt decision making is a crucial factor in economic development, yet underdeveloped countries need not only investment decisions but also administrative , managerial and policy decisions . Thus Hirschman lays too much emphasis on investment decisions as compared to other important decisions essential for development.

3.8BALANCED VS UNBALANCED GROWTH

Dear Students, Having examined critically the doctrines of balanced and unbalanced growth, you will attempt an overview of these strategies of economic development. The case for balanced growth rests on the fact that Vicious Circles of Poverty are at work in underdeveloped which are responsible for the small size of the local market for their goods. The solution lies in a balanced pattern of investment in a number of mutually supporting different industries so that the size of the market is enlarged.

Economists argue that an underdeveloped country does not possess sufficient resources in men, materials and money for simultaneous investments in a number of complementary industries. Another serious weakness of this doctrine is that it emphasis the complementary of markets for final goods, primarily consumer goods, as an inducement to invest and leaves out intermediate goods markets.

Proponents of unbalanced growth strategy favor investments in selected sector rather than simultaneously in all sectors of the economy. Investments in sleeted sectors lead to new

investment opportunities. This is possible by deliberately unbalancing the economy. The aim is to keep alive rather than eliminate the disequilibria by maintaining tensions, disproportions and disequilibria.

The strategy of unbalanced growth aims at removing scarcities in underdeveloped countries by induced investment decision – making. Critics point out that in such countries decision –making itself is scarce along with other resources. Moreover, creating imbalances within the economy by making investments in strategic sectors in the face of acute shortage of resources leads to inflationary pressures and balance of payments difficulties in underdeveloped countries. Despite these differences in approaches, the doctrines of balanced and unbalanced growth have two common problems: one leading to the role of the state, and two the role of supply limitations and supply inelasticities.

Check your progress Activity

Answer the following questions on the spaces provided below.

1. What are the distinctive features of the traditional Society stage?

2. What are the required radical changes in three non-industrial sectors for pre condition to take of stage?

3. list out the basic requirement for take of stage and the three leading sectors

4. What are the basic criticism of the Rostow stage model

5. Explain the basic ideas of the Harrod and Domar growth model

6. What is steady state level of capital?

7. Discuss and explain the effect population growth on Solow model?

8. What is subsistent wage?

9. Lewis argued that skilled labour is only a "quasi bottleneck" what does it mean when he say "quasi bottleneck"?

10. List out the main defects of the Lewis model

11. What is meant by when we say “Big Push?”

12. Compare and contrast balanced and unbalanced growth model?

Chapter Summery

There are different theories explaining the diverse development problems of countries at different social, economic, political, and institutional circumstances.

The essence of Rostow's stages of growth is that it is logically and practically possible to identify stages of development and to classify societies according to those stages. According to him, there are five stages of economic growth; namely Traditional Society , Pre-conditions for the Take-off, Take-off, Drive to Maturity, and Age of Mass Consumption

The growth model that was particularly popular with economic planners just after World War II came to be known as the Harrod-Domar model, since it was based on independently published articles by Roy Harrod and Evsey Domar.

Harrod Domar Growth Model links growth to two important variables: The ability of the economy to save (saving rate= s) and the capital output ratio, θ (its inverse is productivity of capital). By pushing up the rate of saving, it would be possible to accelerate the rate of growth. Likewise, by increasing the rate at which capital produces output or by increasing the productivity of capital (lower θ), growth would be enhanced.

The supply and demand for goods played a central role in Solow model. By considering the supply and demand for goods, we can see what determines how much output is produced at any given time and how this output is allocated among alternative uses.

The theory of the “big push” is associated with the name of **Professor Paul N. Ronstein Rodan**. The thesis is that a “big push” or **a** large comprehensive program is needed in the form of a high minimum amount of investment to overcome the obstacles to development in an underdeveloped economy and to launch it on the path to progress.

The doctrine of balanced growth has several authors who interpret it in their own way. To some it means investing in a laggard sector or industry so as to bring it abreast of others. To others, it implies that investment takes, place simultaneously in all sectors or industries at once. Still to others, it means balanced development of manufacturing industries and agriculture.

The concept of 'unbalanced growth' has been popularized by Hirschman. It is his contention that deliberate unbalancing the economy, according to a pre-designed strategy, is the best way to achieve economic growth in an underdeveloped country.

Chapter Four

Measurement of Income Inequality and Poverty

Introduction

The 1970, witnessed a remarkable change in public and private perceptions about the ultimate nature of economic activity. In both rich and poor countries, there was a growing disillusionment with the idea that relentless pursuit of growth was the principal economic objective of society. In the developed countries, the major emphasis seemed to shift toward more concern for the quality of life, a concern manifested mainly in the environmental movement.

In the poor countries, the main concern focused on the question of growth versus income distribution. That development required a higher GNP and faster growth rate was obvious. The basic issue, however, was (and is) not only how to make GNP grow but also who would make it grow, the few or the many. If it were the rich, it would most likely be appropriated by them, and poverty and inequality would continue to worsen. But if it were generated by the many, they would be its principal beneficiaries, and the fruits of economic growth would be shared more evenly.

In this chapter, we will examine the following five critical questions about the relationship between economic growth, income distribution and poverty

- ☛ What is the extent of relative inequality in developing countries, and how is this related to the extent of absolute poverty
- ☛ Who are the poor, and what are their economics characteristics?
- ☛ What determines the nature of economics growth that is, who benefits?
- ☛ Are rapid economic growth and more equitable distributions of income compatible or conflicting objectives for low income countries? To put it another way, is rapid growth achievable only at the cost of greater inequalities in the distribution of income, or can a lessening of income disparities contribute to higher growth rates?
- ☛ What kinds of policies are required to reduce the magnitude and extent of absolute poverty?

4.1 Income Inequalities: Concepts and Measurement

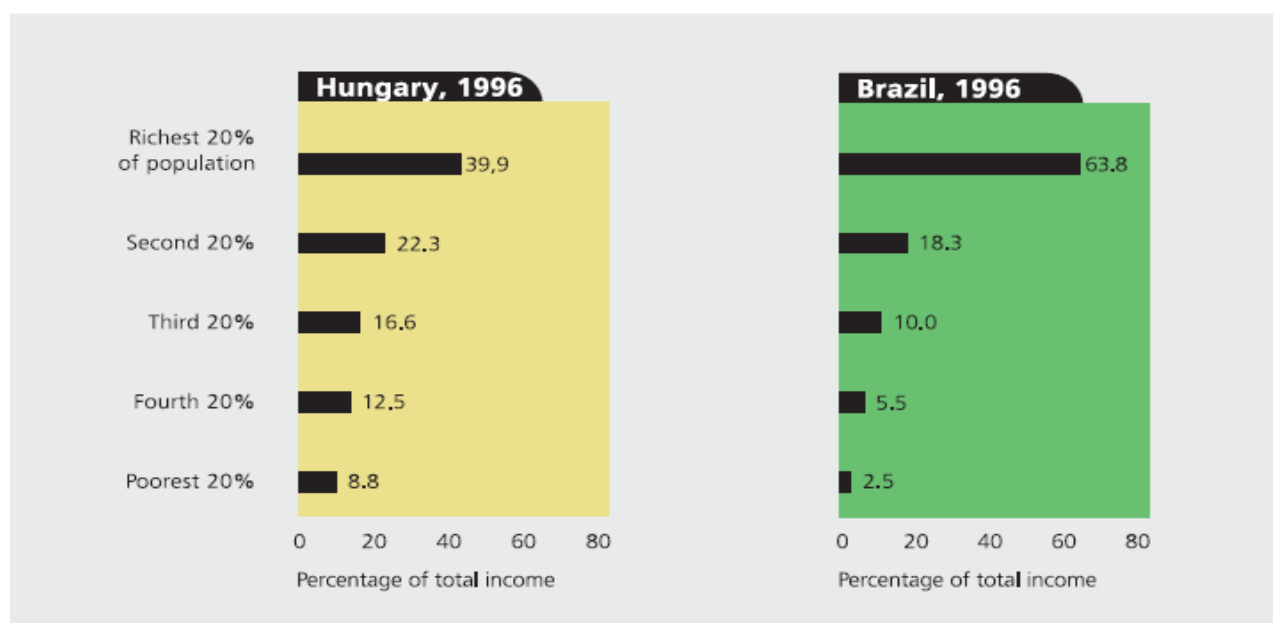
To begin to understand what life is like in a country—to know, for example, how many of its inhabitants are poor? It is not enough to know that country's per capita income. The number of poor people in a country and the average **quality of life** also depend on how equally or unequally income is distributed.

In Brazil and Hungary, for example, the GNP per capita levels are rather close, but the incidence of poverty in Brazil is higher. The reason for this difference can be understood with the help of Figure 4.1, which shows the percentages of national income received by equal percentiles of individuals or households ranked by their income levels.

In Hungary the richest 20 percent (quintile) of the population received about 4.5 times more than the poorest quintile, while in Brazil the richest quintile received more than 30 times more than the poorest quintile. Compare these ratios with an average of about 6:1 in high income countries.

In the developing world income inequality, measured the same way, varies by region: 4:1 in South Asia, 6:1 in East Asia and the Middle East and North Africa, 10:1 in Sub-Saharan Africa, and 12:1 in Latin America.

Figure 4.1 income distribution by population quantile in Brazil and Hungary



4.1.1 Measurement of income inequality

We can get some idea to question 1 and 2 relating to extent and character of inequality and poverty in developing countries by pulling together some recent evidence from a variety of sources. In this section we define the dimensions of income distribution and poverty problems and identify some similar elements that characterize the problem in many developing countries. But first we should be clear about what we are measuring when we speak about the distribution of income.

Economists usually like to distinguish between two principal measures of income distribution for both analytic and quantitative purposes.

- ☛ The personal or size distribution of income
- ☛ The functional or distributive factor share distribution of income.

A) Size Distributions

The personal or size distribution of income is the measure most commonly used by economists. It simply deals with individual persons or households and the total income they receive. The way in which that income was received is not considered. What matters is how much each earns irrespective of whether the income was derived solely from employment or came also from other sources such as interest, profits, rents, gifts or inheritance. Moreover, the location (urban or rural) and occupational sources of the income (e.g. agriculture, manufacturing, commerce, services) are neglected. If Mrs. X and Mrs. Y both receive the same personal income, they are classified together irrespective of the fact that Mrs. Y may work 15 hours a day as a doctor while Mrs. X does not work at all but simply collects interest on his inheritance.

Economists and statisticians, therefore, like to arrange all individuals by ascending personal incomes and then divided the total population in to distinct groups or sizes. A common method is to divide the population in to successive quintiles (fifths) or deciles (tenths) according to the ascending income levels and then determine what proportion of the total national income is received by each income group.

Table 4.1 Size distribution of personal income in a developing country by Income shares quintiles and Deciles

Individuals	Personal income (Money Units)	Percentage share in total income	
		Quintiles	Deciles
1	0.8		
2	1.0		1.8
3	1.4		
4	1.8	5	3.2
5	1.9		
6	2.0		3.9
7	2.4		
8	2.7	9	5.1
9	2.8		
10	3.0		5.8
11	3.4		
12	3.8	13	7.2
13	4.2		
14	4.8		9.0
15	5.9		
16	7.1	22	13.0
17	10.5		
18	12.0		22.5
19	13.5		
20	15.0	51	28.5
Total	100.0	100	100.0

Measure of inequality = Ratio of bottom 40% to 20% = $14/51 = 0.28$

The total or national income of all individuals amounts to 100 units and is the sum of all entries in column 2. In column 3, the population is grouped in to quintiles of four individuals each. The first quintile represents the bottom 20% of the population on the income scale. This group receives only 5% (i.e. a total of 5 money units) of the national income. The second quintile (individuals 5-8) receives 9% of the total income. Alternatively the bottom 40% of the population (quintiles 1 plus 2) is receiving only 14% of the income, while the top 20% (the fifth quintile) of the population receives 51% of the total income.

A common measure of income inequality that can be derived from column 3 is the ratio of the incomes received by the bottom 40% and top 20% of the population. This ratio is often used as a

measure of the degree of inequality between the two extremes of very poor and very rich in a country. In our example, this inequality ratio is equal to 14 divided by 51, or approximately 1 to 3.7 or 0.28.

To provide a more detailed breakdown of the size distribution of income, deciles (10%) shares are listed in column 4. We see, for example, that the bottom 10% of the population (the two poorest individuals) is receiving only 1.8% of the total income, while the top 10% (the two richest individuals) receives 28.5% of the total income.

B) Functional Distribution

The second common measure of income distribution used by economists, the functional or factor share distributions of income, attempts to explain the share of total national income that each of the factors of production (land, labour and capital) -receives. Instead of looking at individuals as separate entities, the theory of functional income distribution inquires into the percentage that labour receives as a whole and compares this with the percentages of total income distributed in the form of rent, interest, and profit (i.e. the return to land and financial and physical capital). Although specific individuals may receive income from all these sources, that is not a matter of concern for the functional approach.

4.1.2 Commonly Used Summary Measures of Inequality

Several summary measures of inequality have been developed, and in this section we present the most important of these.

I. Decile Dispersion Ratio

A simple and popular measure of inequality is the decile dispersion ratio, which presents the ratio of the average consumption (or income) of the richest 10 percent of the population to the average consumption (or income) of the poorest 10 percent. This ratio can also be calculated for other percentiles (for instance, dividing the average consumption of the richest 5 percent, the 95th percentile, by that of the poorest 5 percent, the 5th percentile).

The decile dispersion ratio is readily interpretable, by expressing the income of the top 10 percent (the “rich”) as a multiple of that of those in the poorest decile (the “poor”). However, it

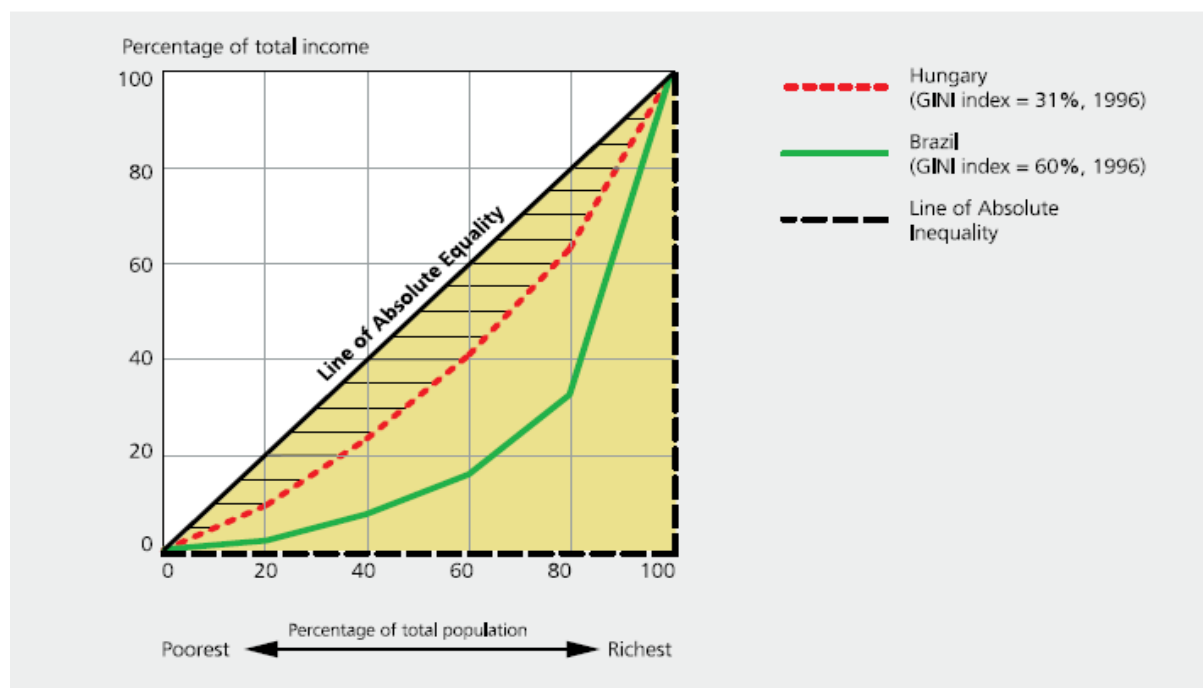
ignores information about incomes in the middle of the income distribution, and does not even use information about the distribution of income within the top and bottom deciles.

II. Lorenz Curves and Gini Indexes

To measure income inequality in a country and compare this phenomenon among countries more accurately, economists use Lorenz curves and Gini indexes. A Lorenz curve plots the cumulative percentages of total income received against the cumulative percentages of recipients, starting with the poorest individual or household (see Fig.4.2).

How do they construct the curve?

First, economists rank all the individuals or households in a country by their income level, from the poorest to the richest. Then all these individuals or households are divided into 5 groups, 20 percent in each, (or 10 groups, 10 percent in each) and the income of each group is calculated and expressed as a percentage of GDP (see Fig. 4.2). Next, economists plot the shares of GDP received by these groups cumulatively— that is, plotting the income share of the poorest quintile against 20 percent of the population, the income share of the poorest quintile and the next (fourth) quintile against 40 percent of the population, and so on, until they plot the aggregate share of all five quintiles (which equals 100 percent) against 100 percent of the population. After connecting all the points on the chart— starting with the 0 percent share of income received by 0 percent of the population— they get the Lorenz curve for this country.

Figure 4.3 Lorenz Curve for Brazil and Hungary

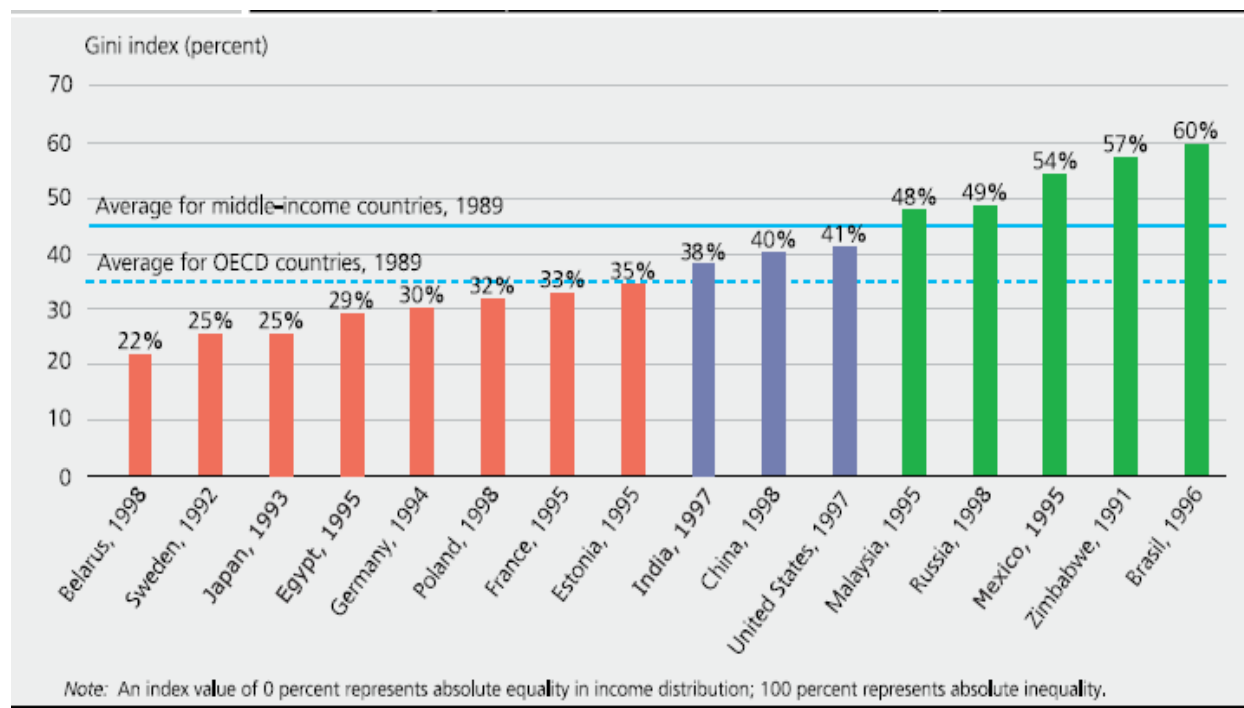
The deeper a country's Lorenz curve, the less equal its income distribution. For comparison, see in Figure 4.2 the "curve" of absolutely equal income distribution. Under such a distribution pattern, the first 20 percent of the population would receive exactly 20 percent of the income, 40 percent of the population would receive 40 percent of the income, and so on. The corresponding Lorenz curve would therefore be a straight line going from the lower left corner of the figure ($x = 0$ percent, $y = 0$ percent) to the upper right corner ($x = 100$ percent, $y = 100$ percent).

Figure 4.2 shows that Brazil's Lorenz curve deviates from the hypothetical line of absolute equality much further than that of Hungary. This means that of these two countries Brazil has the higher income inequality.

A Gini index is even more convenient than a Lorenz curve when the task is to compare income inequality among many countries. The index is calculated as the area between a Lorenz curve and the line of absolute equality, expressed as a percentage of the triangle under the line (see the two shaded areas in Fig. 4.2). Thus a Gini index of 0 percent represents perfect equality the Lorenz curve coincides with the straight line of absolute equality.

A Gini index of 100 implies perfect inequality the Lorenz curve coincides with the x axis and goes straight upward against the last entry (that is, the richest individual or household; see the thick dotted line in Figure 4.2). In reality, neither perfect equality nor perfect inequality is possible. Thus Gini indexes are always greater than 0 percent but less than 100 percent (see Fig. 4.3)

Figure 4.3 the Gini Index for selected countries



4.2 Inequality and Absolute Poverty

A) Inequality: Variations among Countries

As a first step in determining the significance of the income distribution and poverty problems in developing countries, let's observe the following table

The figures in the above table (table 4.2) give a first approximation of the magnitude of income inequality in these developing countries. For example, we see from the last row that by averaging income shares for different percentile groups among all 15 countries, on average the poorest 20% of the population receives only 5.2 of the income the highest 10% and 20% receive 36.0 and 51.8% respectively. By contrast, in a developed country like Japan, the poorest 20% receives a

much higher 8.7% of the income while the richest 10% and 20% get only 22.4% and 37.5% respectively.

Activity 4.2

What is the relationship between levels of per capita income and degree of inequality? Are higher incomes associated with greater or lesser inequality or can no definitive statement be made?

The following table (table 4.3) provides data on income distribution in relation to per capita GNP for a sample of 10 developing countries.

Table 4.3 Per Capita Income and Inequality in Developing Countries, 1990s				
Country	GNP per capita 1996 (US \$)	Income Share of Lowest 40% of Households	Ratio of Highest 20% to Lowest 20%	Gini Coefficient
Bangladesh	260	22.9	4.0	0.28
Kenya	320	10.1	18.3	0.58
Sri Lanka	740	22.0	4.4	0.30
Indonesia	1080	20.4	5.1	0.34
Philippines	1160	15.5	8.4	0.43
Jamaica	1600	16.0	8.2	0.41
Paraguay	1850	8.2	27.1	0.59
Costa Rica	2640	12.8	12.9	0.47
Malaysia	4370	12.9	11.7	0.48
Brazil	4400	8.2	25.7	0.60

Source: Data from World Bank, World Development Indicators, 2007 (Washington, D.C.: World Bank, 2007)

Income distribution is measured in three ways as the total share of income received by the poorest 40% of the population, as the ratio of the share going to the richest 20% divided by that of the poorest 20% and as measured by the Gini coefficient.

What clearly emerges from table 5.3 is that per capita incomes are not highly correlated with any of our three measures of inequality. For example, we see that Sri Lanka has only one-sixth the per capita income of Brazil, but its three inequality measures are much less pronounced than Brazil's. Its Gini coefficient is 0.30 compared to Brazil's 0.60. Similarly, Paraguay, with income seven times higher than that of Bangladesh, shows much greater inequality. Conversely,

Malaysia, with a 1996 per capita income that is 65% higher than Costa Rica, has inequality measures that are not much different. We can conclude, therefore, that there is no apparent relationship between levels of per capita income and the degree of income concentration over relevant range of LDC incomes.

B) Absolute poverty: Extent and magnitude

So far, we have been looking at relative income shares. Now let's switch our attention from relative income shares of various percentile groups within a given population to the more significant question of the extent and magnitude of absolute poverty in developing countries.

What is absolute poverty?

During the 1970'S as interest in problems of poverty increased, development economists took the first step in measuring its magnitude within and across counties by attempting to establish a common poverty line. They devised the now widely used concept of Absolute Poverty.

Absolute poverty is meant to represent a specific minimum level of income needed to satisfy the basic physical needs of food, clothing and shelter in order to ensure continued survival extent of obsolete poverty is therefore the number of people who are unable to command sufficient resources to satisfy basic needs.

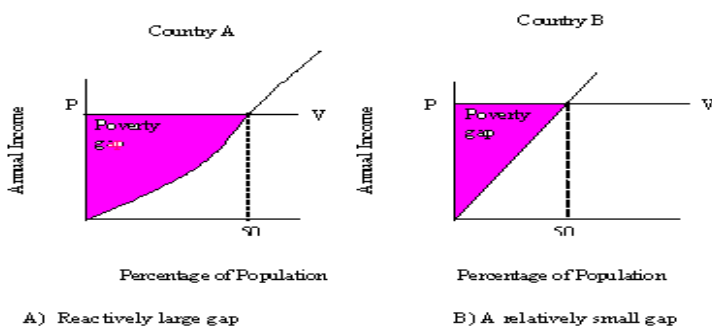
A problem, however, arises when one recognizes that those minimum subsistence levels will vary from country to country and region to region, reflecting different physiological as well as social and economic requirements. Economists have therefore tended to make consultative estimates of world poverty in order to avoid unsubstantiated exaggerations of the problem. One common methodology has been to establish an international poverty line at say, a constant \$370 (based for example, on the value of the 1985 dollar) and then attempt to estimate the purchasing power equivalent of money in terms of developing country's own currency.

The international poverty line knows no boundaries, is independent of the level of national per capita income, and takes into account differing price level by measuring poverty as anyone living on less than \$1 a day in PPP dollars.

Activity 4.3

Let's assume that the poverty line is set at \$360. If two individuals A and B earn \$ 350 and \$300 respectively, the two are below the poverty line Are two equally poor?

In many respects simply counting the number of people below an agreed on poverty line can have its limitations. For example, in the above exercise, both individuals are accorded the same weight when calculating the proportion of the population that lies below the poverty line; clearly, however, the poverty problem is much more serious in individual B. Some economists, therefore, attempt to calculate a poverty gap that measures the total amount of income necessary to raise everyone who is below the poverty line up to that line. To make this clear, let's consider the following two figures for two countries A and B, where line PV is the poverty line.



In both country A and B, 50% the population falls below the same poverty line PV. However the poverty gap in country A is greater than in country B which implies that it will take more of an effort to eliminate absolute poverty in country A.

Activity 4.4

"Higher per capita incomes per se do not guarantee the absence of significant numbers of absolute poor. It is possible for a country with a higher per capita income to have a large percentage line and a larger poverty gap than a country with a lower per capita income " Argue on this statement by relating your answers to Activity 4.2

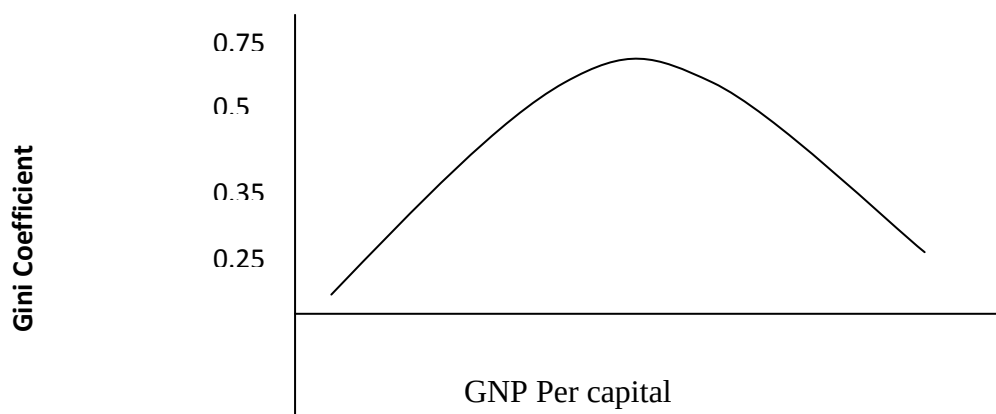
4.3 Inequality, Growth and the Extent of Poverty

Does the pursuit of economic growth along traditional GNP maximizing lines tend to improve, worsen, or have no necessary effect on the distribution of income and the extent of poverty in developing countries? Unfortunately, economists do not possess any definitive knowledge of the specific factors that affect changes in the distribution of income over time for individual countries. Simon Kuznets, to whom we owe so much for his pioneering analysis of the historical growth pattern of contemporary developed countries, has formulated the relationship between distribution of income and growth, known as the inverted U hypothesis.

The Inverted U Hypothesis

In his inverted U curve, Simon Kuznets has suggested that in the early stages of economic growth, the distribution of income will tend to worsen, whereas at later stages it will improve. This observation came to be characterized by the "inverted U" kuznet curve because a longitudinal (time series) plot of changes in the distribution of income - as measured, for example, by the Gini coefficient - seemed, when per capita GNP expanded to trace out the inverted U shaped curve, as shown in Figure 4.4 below.

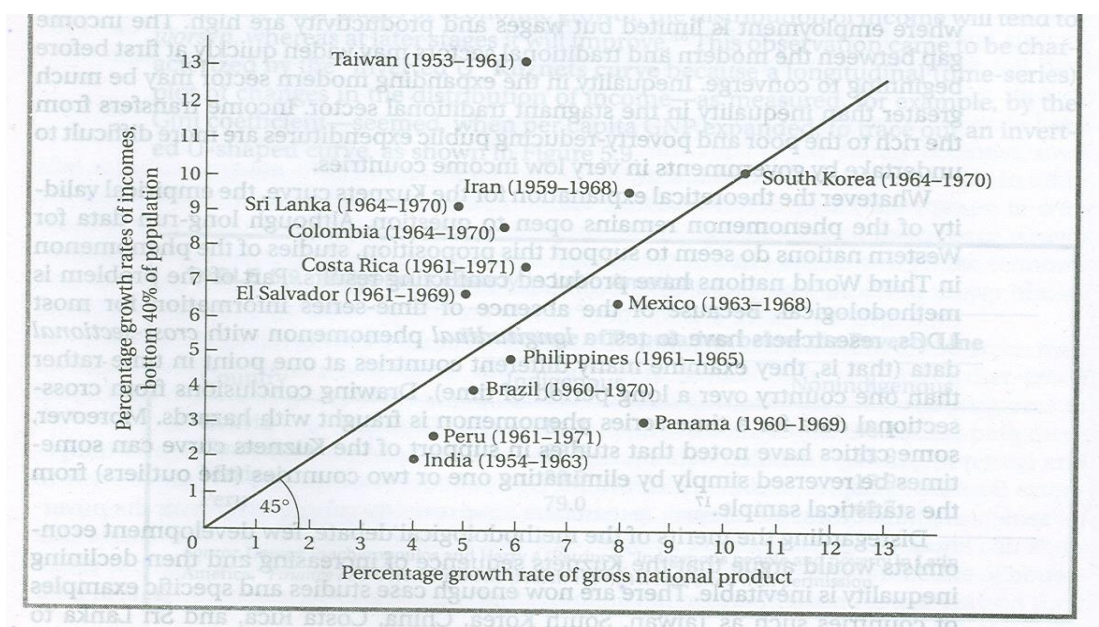
Fig 4.4 the "Inverted U" Kuznets Curve



Explanations as to why inequality seemed first to worsen during the early stages of economics growth before eventually improving are numbers. They almost always relate to the nature of structural change early growth may, in accordance with the Lewis model be concentrated in the modern industrial sector, where employment is limited, but wages and productivity are high. The income gap between modern and traditional sectors may widen quickly at first before

beginning to converge. Inequality in the expanding modern sector may be much greater than inequality in the stagnant traditional sector. Income transfers from the rich to the poor and poverty reducing public expenditures are more difficult to undertake by governments in very low-income countries.

Having examined the relationship between inequality and levels of per capita income, let's look now at the relationship, if any, between economic growth and inequality. In the figure below (Figure 4.5) we have plotted rates of growth of GNP for 13 developing countries on the horizontal axis and the growth rate of income of the lowest 40% of their population along the vertical axis. The data are for the time span shown in parentheses after each country, and the scatter is intended to reveal any obvious relationships between GNP growth rates and improvements in relative income levels for the very poor. Each country's data, therefore, are plotted in the figure at a point reflecting its combination of GNP growth and the income growth of the lowest 40% of its population



Source: Data from World Bank, *World Development Indicators*, 2007 (Washington, D.C.: World Bank, 2007)

The 45 degree line shows a proportionate growth in percentage growth rate of gross national product and percentage growth rates of incomes of bottom 40% of population. Countries above the 45 degree line are those where the distribution of income has improved that is, the incomes of

the bottom 40% grew faster than the overall GNP growth whereas countries below the 45 degree line have experienced a worsening of their income distributions over the indicated period.

The scatter of points in the above figure does not reveal any strong or obvious relationship between GNP growth and the distribution of income. High growth rates do not necessarily worsen the distribution of income indeed; countries like Taiwan, Iran, and South Korea experienced relatively high rates of GNP growth and exhibited improved or at least unchanged distributions of income. Nevertheless, countries like Mexico and Panama grew just as fast but experienced a deterioration of their income distribution. However there does not seem to be a necessary relationship between low GNP growth and improved income distribution. In developing countries like India, Peru and the Philippines, low rates of GNP growth appear to have been accompanied by a deterioration of the relative income shares of the bottom 40%. And yet Sri Lanka, Colombia, Costa Rica, and El Salvador, with similarly low GNP growth rates, managed to improve the relative well being of their low-income population. Note that in all cases the poor did share in some of the benefit of economic growth even though there is no direct, positive relationship between rate of growth and degree of improvement.

The data from fig. 4.5 suggest that it is the character of economic growth (how it is achieved, who participates, which sectors are given priority, what institutional arrangements are designed and emphasized etc.) that determines the degree to which that growth is or is not reflected in improved living standards for the very poor. It is not the mere fact of rapid growth per se that determines the nature of distributional benefits.

4.4 Growth versus Income Distribution. 1

The debate about the relationship between economic distribution takes many forms. The key arguments are the traditional argument and the counter argument.

A) The traditional Argument: Factor shares, saving and Economic growth.

Although much of economic analysis has been strangely silent on the relationship between economic growth and the resulting distribution of income, a large body of theory in essence asserts that highly unequal distributions are necessary conditions for generating rapid growth.

The basic economic argument to justify large income inequalities was that high personal and corporate incomes were necessary conditions of saving, which made possible investment and economic growth through a mechanism such as the Harrod-Domar model described in chapter 3 of the module. If the rich save and invest significant portions of their incomes while the poor spend all their income on consumption goods, and if GNP growth rates are directly related to the proportion of national income saved, then apparently an economy characterized by highly unequal distributions of income would save more and grow faster than one with a more equitable distribution of income. Eventually, it was assumed, national and per capita incomes would be high enough to make sizable redistributions of income possible through tax and subsidy programs. But until such a time is reached, any attempt to redistribute incomes significantly would serve only to lower growth rates and delay the time when a larger income pie could be cut up into bigger slices for all population groups.

B) Counterargument

There are five general reasons why many development economists believe the foregoing argument to be incorrect and why greater equality in developing countries may in fact be a condition for self-sustaining economic growth.

First, sizable inequality and widespread poverty create conditions in which the poor have no access to credit, are unable to finance their children's education, and, in the absence physical or monetary investment opportunities, have many children as a source of old-age financial security. Together these factors cause per capita growth to be less than what it would be if there were greater equality.

Second, common sense, supported by a wealth of recent empirical data, bears witness to the fact that unlike the historical experience of the now developed countries, the rich in contemporary poor countries are *not* noted for their frugality or for their desire to save and invest substantial proportions of their incomes in the local economy. Instead, landlords, business leaders, politicians, and other rich elites are known to spend much of their incomes on imported luxury goods, gold, jewelry, expensive houses, and foreign travel or to seek safe havens abroad for their savings in the form of capital flight. Such savings and investments do not add to the nation's productive resources; in fact, they represent substantial drains on these resources in that the

income so derived is extracted from the sweat and toil of common, uneducated, and unskilled laborers. In short, the rich do not necessarily save and invest significantly larger proportions of their incomes (in the real economic sense of productive domestic saving and investment) than the poor. Therefore, a growth strategy based on sizable and growing income inequalities may in reality be nothing more than an opportunistic myth designed to perpetuate the vested interests and maintain the status quo of the economic and political elites of Third World nations, often at the expense of the great majority of the general population. Such strategies might better be called "antidevelopment."

Third, the low incomes and low levels of living for the poor, which are manifested in poor health, nutrition, and education, can lower their economic productivity and thereby lead directly and indirectly to a slower-growing economy. Strategies to raise the incomes and levels of living of, say, the bottom 40% would therefore contribute not only to their material well-being but also to the productivity and income of the economy as a whole.

Fourth, raising the income levels of the poor will stimulate an overall increase in the demand for locally produced necessity products like food and clothing, whereas the rich tend to spend more of their additional incomes on imported luxury goods. Rising demand for local goods provides a greater stimulus to local production, local employment, and local investment. Such demand thus creates the conditions for rapid economic growth and a broader popular participation in that growth.

Fifth and finally, a more equitable distribution of income achieved through the reduction of mass poverty can stimulate healthy economic expansion by acting as a powerful material and psychological incentive to widespread public participation in the development process. By contrast, wide income disparities and substantial absolute poverty can act as powerful material and psychological disincentives to economic progress. They may even create the conditions for an ultimate rejection of progress by the masses of frustrated and politically explosive people, especially those with considerable education.

We can conclude, therefore, that promoting rapid economic growth and reducing poverty and inequality are not mutually conflicting objectives. The World Bank reached a similar conclusion in its 1990 report on poverty when it declared:

Discussions of policy toward the poor usually focus on the trade-off between growth and poverty. But the review of country experience suggests that this is not a critical trade-off. With appropriate policies, the poor can participate in growth and contribute to it, and when they do, rapid declines in poverty are consistent with sustained growth.

4.5 Concept and Measurements of Poverty

Definition

According to the World Bank (2000), “poverty is pronounced deprivation in well-being.” This of course begs the question of what is meant by well-being.

One approach is to think of one’s well-being as the command over commodities in general, so people are better off if they have a greater command over resources. In this view, the main focus is on whether households or individuals have enough resources to meet their needs. Typically poverty is then measured by comparing an individual’s income or consumption with some defined threshold below which they are considered to be poor. This is the most conventional view – poverty is seen largely in monetary terms and is the starting point for most analyses of poverty.

A second approach to well-being (and hence poverty) is to ask whether people are able to obtain a *specific* type of consumption good: do they have enough food? Or shelter? Or health care? Or education? In this view the analyst would need to go beyond the more traditional monetary measures of poverty: nutritional poverty might be measured by examining whether children are stunted or wasted; and educational poverty might be measured by asking whether someone is illiterate, or by the amount of formal schooling they have received.

Perhaps the broadest approach to well-being (and poverty) is the one articulated by Amartya Sen (1987), who argues that well-being comes from a “capability” to function in society. Thus poverty arises when people lack key capabilities, and so have inadequate incomes or education, or poor health, or insecurity, or low self confidence, or a sense of powerlessness, or the absence of rights such as freedom of speech. Viewed in this way, poverty is a multi-dimensional phenomenon, and less amenable to simple solutions. So, for instance, while higher average incomes will certainly help reduce poverty, these may need to be accompanied by measures to

empower the poor, or insure them against risks, or to address specific weaknesses (such as inadequate availability of schools or a corrupt health service).

Measurements of Poverty

There is no more visible characteristic of under development than poverty. Just like inequality, poverty is both intrinsic and functional. Most people say removal of poverty is the fundamental goal of economic development. Hence considering appropriate measure of poverty is considerably important. Poverty is not only intrinsic interest; it has enormous implication for the way in which entire economies function.

There are different conceptual approaches in measuring well being at the individual level. The conceptual distinction that underlies the measurement practices is between welfare approach and non-welfare approach. The distinction between these conceptual approaches is documented in Ravallion (1992). The welfare approach compares welfare and public policy decisions based on the preference (utilities) of individuals. This approach avoids making subjective judgement, which is inconsistent with individual behaviour. The essence of the approach is the concept of preference ordering and the value of the goods by an individual is deemed to be sufficient statistics for assessing a person's well-being. This approach is well developed both in theory and in practice. The non-welfare approach, on the other hand, prefers to assess the well-being of a person based on certain elementary achievement, such as being able to afford to be adequately nourished or clothed. It may pay little or no regard to information on utilities of the individual only.

The non-welfare ideas have been more diverse. Some are based on identifying specific form of commodity deprivation, which may be absolute commodity deprivation (nutrition oriented or other basic needs approach) and relative commodity deprivation. This approach has a lot of arbitrariness in deciding what commodity matters and how one should value one against the other.

Sen (1980, 1985 and 1987) has provided a different concept, which depends on the non-welfare comparison, but does not rely on the command of commodities. He rejects both the utility as a metrics of welfare and non-welfare commodity based formulation. He defined poverty as lack of capability; capability mean to being able to live long, being well nourished, being healthy, being

literate, and so on. The value of living standard lies in the living, not in the possession of commodities. Hence according to Sen, the task of poverty analysis is to determine what those capabilities are in specific society, and who fails to reach them. This idea has started getting acceptance by policy makers, NGO and international organizations. The World Development Report (2001) definition of poverty is similar to the ideas of Sen and non-welfare conceptual approach.

According to the World Bank Report (World Bank, 2001), poverty has many dimensions extending beyond the low level of income. The first dimension is material deprivation (lack of opportunity), which is measured by an appropriate concept of income or consumption. The second dimension is low achievement in education and health (low capabilities). The first and the second dimensions of poverty have been recognized by the World Development Report 1990. The third and the fourth dimensions of poverty are vulnerability (and exposure to risk or low level of security) and voicelessness (and powerlessness), respectively (World Bank, 2000). These last two dimensions of poverty are recognized by the World Development Report 2000.

The four dimensions of poverty might interact and reinforce to each other (World Bank, 2001). Education and health can interact with material deprivation (World Bank, 1990). Low level of education and health can lead to low level of income and hence might lead to material deprivation. Reducing vulnerability may allow people to take advantage of higher-risk, higher-return opportunities thereby decreasing material deprivation by increasing income and welfare.

4.5.1 Income poverty

Income or consumption traditionally measures material deprivation. Especially consumption (rather than income) is viewed as the preferred welfare indicator because consumption better captures the long-run welfare level than current income. Consumption may better reflect households' ability to meet the basic needs. Income is only one of the elements that allow consumption. Consumption reflects the ability of household's access to credit and saving at times when their income is very low. Hence consumption reflects the actual standard of living (welfare). Consumption is better measured than income.

In most developing countries, an income report of households is believed to be understated compared to consumption expenditure report. Income is so erratic and it may be very difficult for

respondents to recall. However, for consumption to be an indicator of household's welfare it has to be deflated by an adult equivalent scale that depends on the nutritional requirement of each family member. The adult equivalent scale must therefore be different for different age groups and the gender of adult members. Therefore, many of the income poverty measure (such as the head count ratio, poverty gap ratio, and the square of poverty gap ratio) use consumption instead of income.

4.5.1.1 Income Poverty Measures

Income poverty measurement assumes that there is a predetermined and well-defined level of standard of living – called “poverty lines” below, which a person is deemed to be poor.

The non-welfare approach, often used for drawing poverty line, is based on the basic needs or minimum caloric requirement. The *cost of basic need* methods is the popular method of setting poverty line.

First the food poverty line is defined by choosing a bundle of food typically consumed by the poor. The quantity of the bundle of food is determined in such a way to supply the predetermined level of minimum caloric requirement. This bundle is valued at local prices (or they are valued at national price if the desire is to get consistent poverty line across regions and groups). Then a specific allowance for the non-food goods consistent with the spending of the poor is added to the food poverty line. To account for the non-food expenditure, the food poverty line is divided by the food share of the poorest quartile or quintile. This method yields representative poverty line in the sense that it provides a monetary value of a poverty line that accounts for the food and non-food consumption.

Poverty Indices

The most widely used poverty indices are the percentage of the poor, the aggregate poverty gap, and the distribution of income among the poor.

The Foster, Greer, and Thorbecke (1984) P_α class of poverty measures is useful for its ability to capture a range of value judgments on the incidence, depth and severity of poverty. When the real per-adult (per capita) household expenditure, Y_i , are ranked as

$$Y_1 \leq Y_2 \leq \dots Y_q \leq Z <_{q+1} \dots \leq Y_n,$$

Where Z is poverty line, n is the total population, and q is the number of poor, then P_α is given by

The head count index (HCI) is given by

$$HCI = \frac{HC}{N}$$

Where HC is head count (the number of people who earn below the poverty line and N is the total number population.

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^\alpha ; \alpha \geq 0, \text{ for } Y < Z.$$

Here the parameter α reflects the policy maker's degree of aversion to inequality among the poor. If $\alpha = 0$, there is no concern about the depth of poverty and the corresponding poverty index is called head count index (P_0). Hence P_0 corresponds to the fraction of individuals falling below the poverty line. Head-count index is easily understood and communicated, but it is insensitive to differences in the depth of poverty. It fails to capture the extent to which individual income (or expenditure) fall below poverty.

The poverty measure that takes account of the extent of the gap is called Poverty Gap Ratio (PGR):

$$PGR = \frac{\sum_{Y_i < Z} \left(\frac{Z - Y_i}{Z_i} \right)}{N}$$

Where m is mean income and Z is poverty line, Y is income received by each individual; and $Y < Z$; N is the total population. Poverty gap index measure the average income gap of the poor from the poverty line.

If $\alpha = 1$, the poverty index is called the poverty gap index (P_1) and it measures the aggregate poverty deficit of the poor relative to the poverty line. Equivalently, poverty gap index can be

expressed as income gap ratio (mean depth of poverty as a proportion of the poverty line) multiplied by the head count index: that is poverty gap ratio can be written as

$$P_1 = I \cdot P_o$$

Where $I = 1 - \frac{\bar{Y}_0}{Z}$, $\bar{Y}_0$ is mean income of the poor and Z is the poverty line. However, the income gap ratio is not a good measure of poverty. This is because if some on just below poverty line is made sufficiently better off to escape poverty, the mean of remaining poor will fall so income gap will increase. This problem does not arise if income gap ratio is multiplied by the head count index. Hence poverty gap ratio gives a better picture of the depth of poverty. Poverty gap ratio can also be interpreted as an indicator of potentials for eliminating poverty by targeting transfers to the poor. The minimum cost of eliminating poverty using targeted transfer is the sum of all poverty gaps in a population - $(Z - \bar{Y}_0) \times q$. Another drawback of the poverty gap measure is that it does not capture the differences in the severity of poverty among the poor; that is, it does not capture the transfer of income among the poor. If income is transferred from the poor to the least poor, the poverty gap index will be unaffected.

When $\alpha > 1$, the P_α calculation gives more weight to the average income shortfall of the poorest of the poor. Thus P_2 (where $\alpha = 2$) measures the squared proportional shortfalls from the poverty line, which is commonly known as an index of the severity of poverty. The only drawback of the index of severity of poverty is that it is not easy to interpret.

4.5.2 Second Dimension of Poverty: Education and Health Achievements

In 1990, the World Development Report expanded the traditional income based definition of poverty to further include capabilities such as health, education, and nutrition. This report explicitly acknowledges the interaction and the casual relationship among theses dimensions. Education is an input in well being since it provides a means of earning a higher income via work. It is also a welfare outcome in itself because it allows an individual to participate in decision-making that determines the well-being of his societies and himself. Hence literacy, the highest level of education attained (or primary completion rate), gross enrolment ratio, net enrolment ratio can be used in defining the characteristics of poverty.

Mostly literacy is calculated for people above 15 years old. Literacy is not measured below the age of 10 years. Adult literacy rate in this report is defined as the percentage of population aged 10 years and over who can both read and write with understanding a short simple statement on his/her everyday life. Literacy is a good measure of educational achievement, because it reflects a minimum level of successfully completing school. It is calculated by dividing the number of literate by the corresponding age-group population multiplied by 100.

Primary completion rate is defined as the total number of students completing the final year of primary education, regardless of age, expressed as a percentage of the population at the official primary graduation age. It is a simple measure that tracks the progress of the goal of education at all (by the year 2015). It indicates the degree of coverage of primary education.

The gross enrolment ratio is defined as the total enrolment in a specific level of education, regardless of age expressed as a percentage of the official school-age population corresponding to the same level of education in given school-year. It shows the general level of participation in a given level of education and the capacity of the education system to enrol students of a particular age-group. It is calculated by dividing the number of pupils enrolled in a given level of education regardless of age by the population of the age-group which officially corresponds to the given level of education, and multiplied by 100.

Net enrolment ratio is the enrolment of the official age-group for a given level of education expressed as a percentage of the corresponding population. It shows the extent of participation in a given level of education of children belonging to the official age group to the corresponding level of education. The gross enrolment ratio is always higher than the net enrolment ratio. Gross Enrolment ratio can exceed 100 percent if there is a significant overage or underage participation in a given level of education. The difference between gross and net enrolment gives an indication of wrong-age school enrolment. Other school related variables such as the reason why not attending school, distance to elementary school can give additional pictures of education poverty.

The health status of a household can be taken as an indicator of well being. It could be focused on the nutritional status of children, incidence of specific diseases (such diarrhoea, malaria and respiratory diseases), life expectancy and fertility rate as indicators of health, nutrition, health and population status (poverty) of a society. If data on such health characteristics are not

available, proxies such as the number visits to hospitals, and health centers, access to medical services, distance to the nearest clinic, the extent to which children receive vaccination can be used to indicate health poverty.

Health status of households can be assessed by infant mortality rate, under five-mortality rate and life expectancy. Infant mortality rate is the number of deaths to children under 12 months of age per 1000 live births. Under five-mortality rate is the number of deaths to children under five years of age per 1000 live births. Life expectancy is a key measure of welfare and it is the number of years someone is expected to live when he is born.

Anthropometry can be used to assess nutritional status at individual and population level. It requires weight and height measurements over time so that the growth velocity can be measured. A decline in an individual's anthropometric index from one point in time to another could indicate illness, and/or nutritional deficiency that may result in serious health outcome. At the population level, data are commonly available from a cross section survey. Hence at this level, determining the proportion of the population below a cut-off point can assess the prevalence of low anthropometric indices. Using these proportions one can compare the nutritional status among regions and between dates.

Stunting, wasting and body mass indices (BMI) are anthropometric indices that are used to show long and short run malnutrition. Wasting and stunting are mostly used as measures of malnutrition for children up to the age of 5 years. Body mass index is more appropriate for adults, Low height to age ratio is an indicator of stunting (shortness). It is associated with poor overall economic conditions and or repeated exposure to adverse condition. A person is **stunted** when he is shorter than she/he would be at his/her current age. Specifically a person is stunted when the height/age ratio is less than the mean of height/age ratio minus two times the standard deviation of the standardized distribution. When the height/age ratio of an individual is less than the mean of the ratio minus three times the standard deviation of the standardized distribution, it is called **severely stunted**. Stunting is interpreted in general as a measure of long-term malnutrition because malnutrition causes slow growth. This measure is relevant especially for children up to five (six??) years old.

Low weight to height ratio is an indicator of wasting (thinness). *It is associated with a failure to gain weight or a loose of weight.* **Wasting** refers to the magnitude of the weight (kilo grams) to height (meters) ratio of a person. A person is wasted when the weight/height ratio is less than the mean of the ratio minus two times the standard deviation of the standardize distribution. If the ratio is less than the mean ratio minus three times the standard deviation, it is called **severely wasted**. Wasting indicates short-term malnutrition. To make the figures of stunting and wasting comparable across countries, we use global distributions of the required ratios. The statistical package “*Ipi Info*” is the recommended package to calculate the wasting and stunting figures.

Another index weight to age ratio is hybrid of stunting and wasting. However, it is not a recommended index to use it as a precise measure of nutrition because it fails to distinguish well-proportionate children (that is, tall and thin children from short).

Body mass index is a measure of adult malnutrition. It is defined as weight in kilogram divided by the square of height in meters. It is not calculated for pregnant and lactating women. A person is considered normal if his BMI is greater than 18.4, grade 1 chronic energy deficient if BMI is between 17 and 18.4, grade 2 chronic energy deficient if BMI is between 16 and 17, grade 3 chronic energy deficient if BMI is less than 16.

Total fertility rate (TFR) and adolescent fertility rate are used to indicate the population status of a country or group. TFR is the average number of births a woman could expect to have during her lifetime if she followed observed levels of fertility for her age group at every age. It is calculated as the sum of average annual age-specific fertility rate for all reproductive age group (15-50 years old). Adolescent fertility rate (also called age specific fertility rate for women 15-19) is the average number of births a women aged 15-19 could expect to have during her lifetime if she followed observed levels of fertility for that age group, expressed as per 1000 women aged 15-19. It is calculated as annual average.

4.5.3 Third Dimension of Poverty: Security and Empowerment

The World Development Report 2000 (World Bank, 2001) further extends the concept of poverty to include the dimensions of **vulnerability, voicelessness and empowerment**. This has broadened the range of actions that can be considered and the causal framework for analyses. The report also recognizes the practical and operational difficulties with this expansion. The

difficulties include measurement of vulnerability and empowerment and how to weigh the relative importance of the dimensions for policy actions.

At micro-level, the most important vulnerability (risk) that affects the poor are the risk of illness, death, injury, disability, harvest failure and unemployment. At meso (community) level, vulnerability may include harvest failure, unemployment, deforestation, soil degradation, and natural calamities (such as landslide, volcanic eruptions and AIDS). Earthquakes, floods, drought, civil strife, inflation, balances of payments are some of the risks that affect at macro level. These sources of vulnerability can reduce the likelihood of household capacity to get out of poverty. While risk at micro-level can be offset, partly, by actions at household level, macro-level risks require public actions.

Empowerment is an active process, which occurs at different levels. At household level, empowerment refers to intra household inequality, access to and control over resources, and decision making process. At community, regional and national level, empowerment means inequality in access to resources and social interactions that affects gender inequality, as well as the empowerment outcomes of different income, ethnic, or religious groups. Empowerment also includes representativeness in decision-making bodies at local, regional and national levels of government. Transparency may help to increase the probability that the poor will be treated with fairness and respect.

Chapter Summery

The personal or size distribution of income is the measure most commonly used by economists. It simply deals with individual persons or households and the total income they receive. The way in which that income was received is not considered.

The Lorenz curve shows the actual quantitative relationship between the percentages of income recipients and the percentage of the actual income they did in fact receive during, say, a given year.

Gini coefficients are aggregate inequality measures and can vary anywhere from 0 (perfect equality) to 1 (perfect inequality). Gini coefficients for countries with highly unequal income distributions typically lies between 0.50 and 0.70 while for countries with relatively equitable distributions, it is on the order of 0.20 to 0.35.

The functional or factor share distributions of income, attempts to explain the share of total national income that each of the factors of production (land, labour and capital) receives.

Income distribution is measured in three ways as the total share of income received by the poorest 40% of the population, as the ratio of the share going to the richest 20% divided by that of the poorest 20% and as measured by the Gini coefficient.

Absolute poverty is meant to represent a specific minimum level of income needed to satisfy the basic physical needs of food, clothing and shelter in order to ensure continued survival extent of obsolete poverty is therefore the number of people who are unable to command sufficient resources to satisfy basic needs.

In his inverted U curve, Simon Kuznets has suggested that in the early stages of economic growth, the distribution of income will tend to worsen, whereas at later stages it will improve.

There is no more visible characteristic of under development than poverty. Just like inequality, poverty is both intrinsic and functional. Most people say removal of poverty is the fundamental goal of economic development. Hence considering appropriate measure of poverty is considerably important. Poverty is not only intrinsic interest; it has enormous implication for the way in which entire economies function.

According to the World Bank Report (World Bank, 2001), poverty has many dimensions extending beyond the low level of income. The first dimension is material deprivation (lack of opportunity), which is measured by an appropriate concept of income or consumption. The second dimension is low achievement in education and health (low capabilities). The first and the second dimensions of poverty have been recognised by the World Development Report 1990. The third and the fourth dimensions of poverty are vulnerability (and exposure to risk or low level of security) and voicelessness (and powerlessness), respectively (World Bank, 2000). These last two dimensions of poverty are recognised by the World Development Report 2000.

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ARBAMINCH UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ECONOMICS I

ASSIGNMENT

Course Title: Development Economics I

Course Code: Econ-3031

Target Group: Distance students

Instructor:

Credit hours: 3hrs

Maximum marks: 30%

General Instructions:

- **The assignment has 3 parts and 21 questions and 4 pages**
- **Copying from others is strictly forbidden**
- **Attempt ALL questions on separate sheet**
- **Credit will be given for neat and appropriate presentation**

NAME_____

ID.NO _____

SECTION_____

BATCH _____

CENTER_____

IF YOU ADD THE COURSE, PLEASE WRITE 'ADD' HERE_____

PART I: - CHOOSE THE BEST ANSWER AND WRITE YOUR (1 POINT EACH)

1. Which of the following is *not* a problem in comparing developed and developing countries' GNP?
 - A. GNP is understated for developed countries, since a number of items included in their national incomes are intermediate goods
 - B. The economic contribution of a housewife in a peasant family may not be measured in GNP in poor country.
 - C. GNP is understated for developing countries since many of their labor-intensive good have no impact on exchange rate since they are not traded.
 - D. GNP is overstated for countries where the price of foreign exchange is less than market clearing price.
2. Which of the following characteristics are most likely found in developing countries?
 - A. High population growth rates.
 - B. Large number of people living in poverty.
 - C. Very traditional methods of agricultural production.
 - D. all of the above
 - E. none of the above
3. A specific minimum level of income needed to satisfy the basic physical needs is known as _____.
 - A. Poverty
 - B. Relative poverty
 - C. Absolute poverty
 - D. Inequality
 - E. Unemployment
4. The social and institutional processes through which certain group of economic and social elites influence the allocation of scare resources is analyzed mainly by
 - A. Development Economics
 - B. Traditional economics
 - C. Development economics
 - D. Labor economics
 - E. None of the above
5. The three core values of development are
 - A. Substance, self esteem and cultural development
 - B. Sustenance, freedom and self esteem
 - C. Growth, development and poverty
 - D. Sustenance, poverty and freedom
 - E. None of the above
6. According to Rostow, the stage of economic development characterized by great watershed in the life of the society is
 - A. Take off
 - B. The pre-condition for take off
 - C. The traditional society
 - D. The drive to maturity
 - E. The age of high mass consumption
7. According to W.W.Rostow, which of the following does not belong to the "precondition for take-off":

- A. Increased agricultural productivity,
 - B. Political stability,
 - C. Development of social overhead capital,
 - D. Growth of the durable consumer goods industry
 - E. All of the above
8. Which of the following statements is consistent with Hirschman's theory of unbalanced growth?
- A. A country should focus on industry, because agriculture is not a dynamic sector.
 - B. To initiate the industrialization process a country requires a "big push."
 - C. When certain industries are developed first, linkage effects will induce the development of new industries.
 - D. None of the above
 - E. All of the above.
9. The inverted U hypothesis states that
- A. The relationship between growth and inequality is negative
 - B. In the latter stage of growth, inequality and growth are positively related
 - C. In the earlier stage of growth, inequality and growth are negatively related
 - D. In the latter stage of growth, inequality and growth are negatively related
 - E. All of the above
10. A value of one in Gini-coefficient indicates
- A. Maximum growth
 - B. Minimum inequality
 - C. Maximum economic development
 - D. Maximum inequality
 - E. None of the above

Part II: Discussion questions: your answers should be to the point

1. What is the difference between Economic Growth and Economic Development? Give brief outline of their difference.
2. Describe the three core values of Development
3. Ethiopia is one of the largest nations in Africa in terms of physical and population size. Discuss the advantages and disadvantages of this size in development.
4. What is Sustainable Development? What is the condition to say development is sustainable development?
5. Discuss and explain Rostow's stages of economic growth.
6. Discuss and explain the effect population growth on Solow model?
7. Compare and contrast balanced and unbalanced growth model?

Part III: Work out questions: show all the necessary steps (15 pts)

1. The following information is given for a hypothetical country X, Life expectancy at birth (years) 52.4, Adult literacy rate (% ages 15 and above) 35.9, Combined primary, secondary and tertiary gross enrolment ratio (%) 45.1, GDP per capita (PPP US\$) 700.
 - a. Given the above information calculate the HDI (4 points)
 - b. In which human development group does the country lie? (1 point)
2. The following problem is based on the “introductory” Solow model. Specifically, we assume that population growth, as well as technological progress, are zero. A typical economy is described by the following equations:
 - i) $Y = K^{0.5}L^{0.5}$ (production function)
 - ii) $s = 0.2$ (saving's rate)
 - iii) $d = 0.1$ (depreciation rate)

Using the Solow model, answer the following questions:

- a) What are the steady state values of k , y , c and i ?
- b) What are the values of k and y if the economy operates at the “Golden Rule” level of capital accumulation?
- c) Imagine that you want to “drive” this country in the “Golden Rule” levels of k and y . What is the saving rate that you have to impose? What would be the level of c ?
- d) Assuming that you impose the new saving rate. What would be the immediate and long run effects on c , k , and y ? Draw the path of these variables.