GROWTH AND DEVELOPMENT

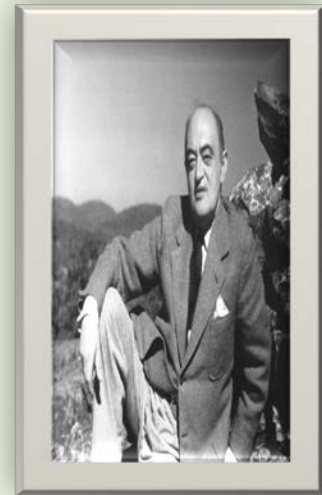## PAPER FOUR - SEMESTER FIVE

THIRD YEAR BACHELOR OF ARTS (ECONOMICS)

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Paper – V: Growth and Development.

	Semester V	
SNO.	Module	PNO.
1.	**Meaning of Development and Relevant Concepts.** Distinction between growth and development, Human development, Human Development Index, Gender Development Index, Sen's capabilities approach, Environmental sustainability and development, Market and State as agencies of development	03
2.	**Classical Theories of Development.** Rostow's stages of growth, Harrod-Domar growth model, Structural change and Lewis' model of unlimited supplies of labor, Solow's growth theory	39
3.	**Contemporary Models of Development and Underdevelopment.** Theories of endogenous growth with special reference to Romer's model, underdevelopment as coordination failure, multiple equilibria, the big push theory and Liebenstein Theory of Critical Minimum Efforts.	57
4.	**Poverty, Inequality and Development.** Measurement of poverty – absolute and relative, Head-Count Index and Poverty Gap Indices, policy options for alleviation of poverty, measurement of income inequality, economic growth and income inequality – Kuznet's inverted U hypothesis, impact of inequality on development.	75

CHAPTER – 1

MEANING OF DEVELOPMENT AND RELEVANT CONCEPTS

PREVIEW.

- Distinction between growth and development.
- Human development & Human Development Index.
- Gender Development Index.
- Amartya Sen's capabilities' approach.
- Environmental sustainability and development.
- Market and State as agencies of development.

ECONOMIC GROWTH.

Economic growth may be defined as a rate of expansion that can move an UDC from a near subsistence mode of living to substantially higher levels in a comparatively short period of time i.e. in decades rather than centuries.

MEASURES OF ECONOMIC GROWTH.

1. **Rise in GNP or GDP**. Economic growth is a process whereby an economy's GNP increases over a long period of time. However, GDP is a better measure of economic growth because it reflects domestic growth on account of domestic effort. Yet when population increases faster than the rate of economic growth, the per capita income will decline and economic growth will lose its meaning. Hence growth in per capita income is considered as a better indicator of economic growth.

2. **Rise in Per Capita Product or Income.** Increase in per capita income is universally accepted as a measure of economic growth. However it has the following limitations:-

    a) The **per capita income** does not indicate the types of goods and services produced in a country. It also fails to measure the amount of welfare which people derive from the use of these goods and services. Social cost in terms of environmental pollution, overcrowding in cities and overwork is not taken into account. In fact social costs must be subtracted from the GDP to arrive at the net per capita GDP.

    b) **Many goods and services** do not go through the market mechanism and hence not included in the GDP estimates. For example, unpaid house work, self repairs etc.

c) **Estimates of GDP do not reveal** exploitation and waste of natural resources. Depletion of non-renewable natural resources such as minerals and burning of natural gas are examples. Exploitation of minerals may increase the GDP in the present but not in future.

d) **The rate of increase in per capita GDP** does not say anything about its distribution in the country. Distribution of income influences the level of economic welfare. A more equitable distribution will result in a greater level of economic welfare.

e) **International comparisons of per capita** GDP becomes difficult because different countries follow different exchange rate systems. Under fixed exchange rate system, some currencies will be undervalued or overvalued and this will not give the correct picture.

f) **Relative price structures** are not the same in all countries which creates problem in making comparisons of per capita GDP in different countries. For example, while the GNP per capita of China in 2001 was $ 890, her PPP per capita GNP was $ 4260 in the same year.

ECONOMIC DEVELOPMENT.

Economic development until the 1960s was considered the same as economic growth. It is now understood as economic growth plus some progressive changes which determine the welfare of the people. **Mahbub ul Haq, a leading Pakistani economist** observed that **"the problem of development must be defined as a selective attack on the worst forms of poverty. Development goals must be defined in terms of progressive reduction and eventual elimination of malnutrition, disease, illiteracy, squalor, unemployment and inequalities. We were taught to take care of our GNP because it would take care of poverty. Let us reverse this and take care of poverty because it will take care of the GNP. In other words, let us worry about the content of GNP even more than its rates of increase."**

There are two approaches to the concept of Economic Development and these two approaches are the traditional and the modern approach.

The Traditional Approach.

The traditional approach defines economic development in economic terms. It means a sustained annual increase in GNP at rates varying from 5 to 7 percent along with changes in the economic structure so that the share of agriculture declines in both production and employment and the share of the secondary and tertiary sectors increases. The policy measure to achieve such GNP growth is industrialization. Objectives of poverty elimination, reduction in economic inequalities and employment generation are subsumed in the process of industrialization. **The traditional approach is also known as the Trickle Down approach to Economic Development.**

The Modern Approach.

The Trickle Down approach failed to solve the problems of mass poverty is most of the developing countries. During the 1970s, economic development was redefined to include objectives such as reduction and elimination of poverty, inequality and unemployment. **'Redistribution with Growth'** became the new approach to economic development. Following the new approach, **Charles P Kindleberger and Bruce Herrick** observed that:

"Economic development is generally defined to include improvements in material welfare, especially for persons with the lowest incomes, the eradication of mass poverty with its correlates of illiteracy, disease and early death, changes in the composition of inputs and outputs that generally include shifts in the underlying structure of production away from agricultural towards industrial activities, the organization of the economy in such a way that productive employment is general among the working age population rather that the situation of a privileged minority and the correspondingly greater participation of broadly based groups in making decisions about the directions, econ9mica and otherwise, in which they should move to improve their welfare."

Dudley Seers observed: "The questions to ask about a country's development are therefore: What has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have declined from high levels, then beyond doubt this has been period of development for the country concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be strange to call the result development even if pr capita income doubled."

Measures of Economic Development.

The following are the measures of economic development:

1. **Gross National Product.** Economic development can be measured in terms of increase in the economy's real national income over a long period of time. Real GNP fails to take into consideration changes in the growth of population. If a rise in real national income is accompanied by a faster growth in population, there will be no economic growth but retardation. The GNP figure also does not reveal the costs to society of environmental pollution, urbanization, and industrialization and population growth. It does not say anything about the distribution of income in the economy.

2. **GNP Per Capita.** The second measure relates to an increase in the per capital real income of the economy over the long period. According to this measure, the rate of increase in real income should be higher than the growth rate of population. Even this measure has a number of limitations. For instance, it is possible that while per capita real income is increasing, per capita consumption might be falling. People might be increasing the rate of saving or the government might be using up the increased income for military or other purposes. Further, if the increase in real national income goes to the rich instead of the poor, it cannot be considered as economic development.

3. **Welfare.** The welfare measure looks at economic development as a process whereby there is an increase in the consumption of goods and services of individuals. **According to Okun and Richardson,** "economic development is a sustained secular improvement in material well being which we may consider to be reflected in an increasing flow of goods and services." This indicator is also not free from limitations. The first limitation arises with regard to the weights to be attached to the consumption of individuals. Consumption of goods and services depends on the tastes and preferences of individuals. It is therefore not correct to have the same weights in preparing the welfare index of individuals. Further the increase in total output may be due to the increase in production of capital goods which will be at the cost of reduced output of consumer goods. How the output is produced is yet another relevant question. The expansion of output might have raised the real costs i.e. pain and sacrifice and social costs in the economy. Finally, increase in output per head cannot be considered as increase in economic welfare because we need to make value judgments regarding income distribution, composition of output, tastes, real cost and other changes that are related to the increase in real income.

4. **Social Indicators.** Social indicators include health, food and nutrition, education including literacy and skills, employment, conditions of work, consumption of basic necessities, transportation, housing including household facilities, clothing, recreation land entertainment, social security etc. All these indicators emphasize on the quality of the development process. However, there are problems in construction a common index of development relating to these social indicators. There is no agreement among economists as to the number and type of items to be included in such an index. Hence, economists and UN organizations use GNP per capita as a measure of economic development.

CONCEPT OF HUMAN DEVELOPMENT.

The UNDP Human Development Report 1997 describes human development as **"the process of widening people's choices and the level of well-being they achieve are at the core of the notion of human development. Such theories are neither finite nor static. But regardless of the level of development, the three essential choices for people are to lead a long and healthy life, to acquire knowledge and to have access to the resources needed for a decent standard of living. Human development does not end there, however. Other choices highly valued by many people, range from political, economic and social freedom to opportunities for being creative and productive and enjoying self respect and guaranteed human rights". The HDR 1997 further stated that, "Income clearly is only one option that people would like to have though an important one. But it is not the sum total of their lives. Income is only a means with human development the end".**

What we understand from the description of human development found in HDR 1997 is that human development is a continuous process. The process becomes developmental only if it increases choices and improves human well-being. Amongst other choices, the three most important choices are that of long and healthy life which is determined by life expectancy at birth, to acquire knowledge which is determined by education and a decent standard of living which is determined by GDP per capita. These three choices are also the components of human development index. While these three choices are basic to human development, the choices go beyond these three to include the ever expanding social, political and economic freedoms that make human life worth living. Thus guaranteed human rights become an important aspect of human development.

According to **Paul Streeton**, human development is necessary due to the following reasons:

1. Economic growth is only a means to the end of achieving human development.
2. Investments in education, health and training will increase longevity and productivity of the labor force and thereby improve human development.
3. Female education and development widens choices for women's development. Reduced infant mortality rate reduces fertility rate and also reduces the size of the family. It further improves female health and helps to reduce the rate of growth of population.
4. Encroachment upon the natural environment is the result of growing size of impoverished populations. Problems of desertification, deforestation, soil erosion, erosion of natural beauty, unpleasant habitats and surroundings will reduce with human development.
5. Poverty reduction will encourage people to satisfy higher order needs like esteem needs and the need for self-actualization. Thus human development can contribute to a better civil society, a credible democracy and social stability and political stability.

THE HUMAN DEVELOPMENT INDEX (New method for 2011 data onwards).

1. Life Expectancy Index (LEI)

$$= \frac{LE - 20}{85 - 20}$$

2. Education Index (EI)

$$= \frac{\sqrt{MYSI + EYSI}}{2}$$

2.1 Mean Years of Schooling Index (MYSI) $= \frac{MYS}{15}$

2.2 Expected Years of Schooling Index (EYSI) $= \frac{EYS}{18}$

3. Income Index (II)

$$= \frac{\ln(GNIpc) - \ln(100)}{\ln(75,000) - \ln(100)}$$

Finally, the HDI is the geometric mean of the previous three normalized indices:

$$HDI = (LEI.EI.II)1/3$$

LE   :   Life expectancy at birth

MYS :   Mean years of schooling (Years that a 25-year-old person or older has spent in

 Schools)

EYS :   Expected years of schooling (Years that a 5-year-old child will spend with his

 education in his whole life)

GNIpc: Gross national income at purchasing power parity per capita.

Calculating the Human Development Index

The Human Development Index (HDI) is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalized indices measuring achievements in each dimension.

There are two steps to calculating the HDI.

Step 1. Creating the dimension indices

Minimum and maximum values (goalposts) are set to transform the indicators expressed in different units into indices between 0 and 1. These goalposts act as the 'natural zeroes' and 'aspirational goals', respectively, from which component indicators are standardized. They are set at the following values:

Dimension	Indicator	Minimum	Maximum
Health	Life Expectancy	20	85
Education	Expected Years of Schooling	0	18
	Mean Years of Schooling	0	15
Standard of Living	GNI_{PC} (PPP 2011 $)	100	75000

The justification for placing the natural zero for life expectancy at 20 years is based on historical evidence that no country in the 20th century had a life expectancy of less than 20 years (Oeppenand Vaupel 2002; Maddison 2010; Riley 2005).

Societies can subsist without formal education, justifying the education minimum of 0 years. The maximum for mean years of schooling, 15, is the projected maximum of this indicator for 2025. The maximum for expected years of schooling, 18, is equivalent to achieving a master's degree in most countries.

The low minimum value for gross national income (GNI) per capita, $100, is justified by the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum, which is not captured in the official data. The maximum is set at $75,000 per capita. Kahneman and Deaton (2010) have shown that there is a virtually no gain in human development and well-being from annual income beyond $75,000. Assuming annual growth rate

of 5 percent, only three countries are projected to exceed the $75,000 ceiling in the next five years.

Having defined the minimum and maximum values, the dimension indices are calculated as:

$$DimensionIndex = \frac{actual\,value - minimum\,value}{maximum\,value - minimum\,value}$$

(1)

For the education dimension, equation 1 is first applied teach of the two indicators, and then the arithmetic mean of the two resulting indices is taken. Because each dimension index is a proxy for capabilities in the corresponding dimension, the transformation function from income to capabilities is likely to be concave (Anand and Sen 2000)—that is, each additional dollar of income has a smaller effect on expanding capabilities. Thus, for income, the natural logarithm of the actual, minimum and maximum values is used.

Step 2. Aggregating the dimensional indices to produce the Human Development Index

The HDI is the geometric mean of the three dimension indices:

$$\mathbf{HDI} = (\mathbf{I}_{HEALTH} . \mathbf{I}_{EDUCATION} . \mathbf{I}_{INCOME})^{1/3}$$

(2)

Example: Costa Rica	
Life expectancy at birth (years)	**79.93**
Mean years of schooling (years)	**8.37**
Expected years of schooling (years)	**13.5**
GNI per capita (PPP $)	**13,011.7**
Note: Values are rounded.	

Health index $= \dfrac{79.93-20}{85-20} = 0.922$

Mean years of schooling index $= \dfrac{8.37-0}{15-0} = 0.588$

Expected years of schooling index $= \dfrac{13.5-0}{18-0} = 0.750$

Education index $= \dfrac{0.558+0.750}{2} = 0.654$

$$\text{Income index} = \frac{\ln(13{,}011.7)-\ln(100)}{\ln(75{,}000)-\ln(100)}$$

$$= \frac{9.47-4.60}{11.22-4.60} = 0.735$$

$$\text{Human Development Index} = HDI = \frac{(0.922+0.654+0.735)}{3} = 0.763$$

The HDR 2015 has grouped countries in four categories:

1. **Very high human development** - **0.800** - **1.00**
2. **High human development.** - **0.700** - **0.799**
3. **Medium human development.** - **0.550** - **0.699**
4. **Low human development.** - **< 0.550**

The HDI trends for some selected countries are given in Table 3.1 below.

Table 3.1 – Human Development Index Trends.				
VERY HIGH HUMAN DEVELOPMENT	**1990**	**2000**	**2010**	**2014**
1 Norway	0.849	0.917	0.940	**0.944**
2 Australia	0.865	0.898	0.927	0.933
3 Switzerland	0.831	0.888	0.924	0.930
4 Denmark	0.799	0.862	0.908	0.923
5 Netherlands	0.829	0.877	0.909	0.922
6 Germany	0.801	0.855	0.906	0.916
6 Ireland	0.770	0.861	0.908	0.916
8 United States	0.859	0.883	0.909	0.915
9 Canada	0.849	0.867	0.903	0.913
9 New Zealand	0.820	0.874	0.905	0.913
11 Singapore	0.718	0.819	0.897	0.912
12 Hong Kong China (SAR)	0.781	0.825	0.898	**0.910**
HIGH HUMAN DEVELOPMENT				
50 Belarus	-	0.683	0.786	**0.798**
50 Russian Federation	0.729	0.717	0.783	0.798
63 Mauritius	0.619	0.674	0.756	0.777
67 Cuba	0.675	0.685	0.778	0.769
69 Iran	0.567	0.665	0.743	0.766
73 Sri Lanka	0.620	0.679	0.738	**0.757**
MEDIUM HUMAN DEVELOPMENT				
106 Botswana	0.584	0.561	0.681	**0.698**

110 Indonesia	0.531	0.606	0.665	0.684
116　South Africa	0.621	0.632	0.643	0.666
121　Iraq	0.572	0.606	0.645	0.654
130　India	0.428	0.496	0.586	**0.609**
132　Bhutan	-	-	0.573	0.605
142　Bangladesh	0.386	0.468	0.546	**0.570**
LOW HUMAN DEVELOPMENT				
145 Kenya	0.473	0.447	0.529	**0.548**
147　Pakistan	0.399	0.444	0.522	0.538
188 Niger	0.214	0.257	0.326	**0.348**

The HDI for some selected countries along with their components is given in Table 2.2 below:

Table 2.2: HDI (2014) for Selected Countries.

HDI Rank	Country	HDI Value	LEB (Years)	MYS (Years)	EYS (Years)	GNIpc (Constant 2011 PPP$)
Very High Human Development						
1	**Norway**	**0.944**	**81.6**	**12.6**	**17.5**	**64,992**
6	**Germany**	**0.916**	**80.9**	**13.1**	**16.5**	**43,919**
8	**United States**	**0.915**	**79.1**	**12.9**	**16.5**	**52,947**
14	**United Kingdom**	**0.907**	**80.7**	**13.1**	**16.2**	**39,267**
20	**Japan**	**0.891**	**83.5**	**11.5**	**15.3**	**36,927**
22	**France**	**0.888**	**82.2**	**11.1**	**16.0**	**38,056**
39	**Saudi Arabia**	**0.837**	**74.3**	**8.7**	**16.3**	**52,821**
High Human Development						
50	**Russian Federation**	**0.798**	**70.1**	**12.0**	**14.7**	**22,352**
63	**Mauritius**	**0.777**	**74.4**	**8.5**	**15.6**	**17,470**
69	**Iran**	**0.766**	**75.4**	**8.2**	**15.1**	**15,440**
73	**Sri Lanka**	**0.757**	**74.9**	**10.8**	**13.7**	**9,779**
90	**China**	**0.727**	**75.8**	**7.5**	**13.1**	**12,547**
Medium Human Development						
106	**Botswana**	**0.698**	**64.5**	**8.9**	**12.5**	**16,646**
130	**India**	**0.609**	**68.0**	**5.4**	**11.7**	**5,497**
142	**Bangladesh**	**0.570**	**71.6**	**5.1**	**10.0**	**3,191**
Low Human Development						
145	**Kenya**	**0.548**	**61.6**	**6.3**	**11.0**	**2,762**
147	**Pakistan**	**0.538**	**66.2**	**4.7**	**7.8**	**4,866**
188	**Niger**	**0.348**	**61.4**	**1.5**	**5.4**	**908**

Source: Compiled from UNDP HDR 2015.

CRITICISMS OF THE HDI.

The Human Development Index has been criticized for failing to include any ecological considerations, focusing exclusively on national performance and ranking (although many national Human Development Reports, looking at sub-national performance, have been published by UNDP and others—so this last claim is untrue), not paying much attention to development from a global perspective and based on grounds of measurement error of the underlying statistics and formula changes by the UNDP which can lead to severe misclassifications of countries in the categories of being a 'low', 'medium', 'high' or 'very high' human development country.

Economists Hendrik Wolff, Howard Chong and Maximilian Auffhammer discuss the HDI from the perspective of data error in the underlying health, education and income statistics used to construct the HDI. They identify three sources of data error which are due to (i) data updating, (ii) formula revisions and (iii) thresholds to classify a country's development status and find that 11%, 21% and 34% of all countries can be interpreted as currently misclassified in the development bins due to the three sources of data error, respectively. The authors suggest that the United Nations should discontinue the practice of classifying countries into development bins because the cut-off values seem arbitrary, can provide incentives for strategic behavior in reporting official statistics, and have the potential to misguide politicians, investors, charity donators and the public at large which use the HDI.

In 2010 the UNDP reacted to the criticism and updated the thresholds to classify nations as low, medium and high human development countries. In a comment to The Economist in early January 2011, the Human Development Report Office responded to a January 6, 2011 article in *The Economist* which discusses the Wolff *et al.* paper. The Human Development Report Office states that they undertook a systematic revision of the methods used for the calculation of the HDI and that the new methodology directly addresses the critique by Wolff *et al.* in that it generates a system for continuous updating of the human development categories whenever formula or data revisions take place. Some common criticisms of the HDI are as follows:

1. It is a redundant measure that adds little to the value of the individual measures composing it.
2. It is a means to provide legitimacy to arbitrary weightings of a few aspects of social development.
3. It is a number producing a relative ranking which is useless for inter-temporal comparisons, and difficult to compare a country's progress or regression since the HDI for a country in each year depends on the levels of, say, life expectancy or GDP per capita of other countries in that year. However, each year, UN member states are listed and ranked according to the computed HDI. If high, the rank in the list can be easily used as a means of national aggrandizement; alternatively, if low, it can be used to highlight national insufficiencies.

Ratan Lal Basu criticizes the HDI concept from a completely different angle. According to him the Amartya Sen-Mahbub ul Haq concept of HDI considers that provision of material amenities alone would bring about Human Development, but Basu opines that Human Development in the true sense should embrace both material and moral development. According to him human development based on HDI alone, is similar to dairy farm economics to improve dairy farm output. To quote: 'so human development effort should not end up in amelioration of material deprivations alone: it must undertake to bring about spiritual and moral development to assist the biped to become truly human.' For example, a high suicide rate would bring the index down.

A few authors have proposed alternative indices to address some of the index's shortcomings. However, of those proposed alternatives to the HDI, few have produced alternatives covering so many countries, and that no development index (other than, perhaps, Gross Domestic Product per capita) has been used so extensively—or effectively, in discussions and developmental planning as the HDI.

GENDER RELATED DEVELOPMENT INDEX.

The GDI adjusts the average achievement measured under HDI to reflect the inequalities between men and women. The three components of GDI are:

1.   Female life expectancy.
2.   Female adult literacy and gross enrollment ratio and,
3.   Female per capita income.

In the absence of gender inequality, the values of HDI and GDI would be the same. However, if gender inequality exists, the GDI value would be lower than the HDI value. The greater the difference between these values, greater will be gender inequality. Table 1.4 provides data for GDI and HDI for selected countries. In countries like Iceland, Norway, Canada, Mexico, United States, United Kingdom, Japan, Russian Federation, Malaysia, Venezuela, Philippines, Sri Lanka, China, Vietnam and Indonesia there is no noticeable difference between the two indices. However, the difference between the two indices in case of countries like Saudi Arabia, Pakistan, Iran, India, Egypt and Nigeria is marginally higher.

**Table 1.4: Comparison of HDI, GDI, HPI and Income Poverty Line.
(Some Selected Countries – 2005)**

HDI Rank	Country	2005			Income Poverty Line US $ One a Day 1993 PPP 1990-2005
		HDI	GDI	HPI	
High Human Development (HDI 0.8 and above)					
1	Iceland	0.968	0.962	--	
2	Norway	0.968	0.957	--	
4	Canada	0.961	0.956	--	
8	Japan	0.953	0.942	--	
12	US	0.951	0.937	--	
16	UK	0.946	0.944	--	
26	SK	0.921	0.910	--	
52	Mexico	0.829	0.820	6.8	3.0
63	Malaysia	0.811	0.802	8.3	< 2
67	Russian Federation	0.802	0.801	---	---
70	Brazil	0.800	0.798	9.7	7.5
Medium Human Development (HDI 0.5 to 0.8)					
74	Venezuela	0.792	0.787	8.8	18.5
90	Philippines	0.771	0.768	15.3	14.8
81	China	0.777	0.776	11.7	9.9
94	Iran	0.759	0.750	12.9	< 2
99	S Lanka	0.743	0.735	17.8	5.6
105	Vietnam	0.733	0.732	15.2	< 2
107	Indonesia	0.728	0.721	18.2	---
112	Egypt	0.608	---	20.0	7.5
128	India	0.619	0.600	31.3	34.3
136	Pakistan	0.551	0.525	36.2	17.0
140	Bangladesh	0.547	0.539	40.5	41.3
Low Human Development (HDI less than 0.5)					
158	Nigeria	0.470	0.456	37.3	70.8
174	Niger	0.374	0.355	54.7	60.6
176	Burkina Faso	0.370	0.364	55.8	27.2

Source: HDR 2007.

GENDER EMPOWERMENT MEASURE. The GEM was introduced in HDR 1995. The GEM is an index which consists of the following:

1. Women's participation in political decision making.
2. Women's access to professional opportunities, and
3. Women's income earning power.

Historically, world over, women have been deprived of political and economic power. The Gender Empowerment Measure therefore determines the extent of political and economic power exercised by women. It attempts to find out whether equality of choice is available to women as compared to men.

Measurement of the GEM. The GEM captures gender inequality in three key areas:

1. **Political Participation and Decision-making Power.** It is measured by women's and men's percentage shares of parliamentary seats.
2. **Economic participation and Decision-making Power.** It is measured by two indicators:
a) Women's and men's percentage shares of positions as legislators, senior officials and managers.
b) Women's and men's percentage shares of professional and technical positions.
3. **Power over Economic Resources.** It is measured by women's and men's estimated earned income (PPP US $).

An equally distributed equivalent percentage (EDEP) is calculated for each of these three dimensions as a population weighted average. The GEM is calculated as a simple average of three EDEP indices:

GEM = 1/3 (indexed EDEP for parliamentary participation)
+ 1/3 (indexed EDEP for economic participation)
+ 1/3 (EDEP for income).

The GEM of India. The HDR 1995 and 1999 gives GEM value for India. These values for the years 1993 and 1997 are given below:

Year	GEM Value	GEM Rank
1993	0.226	101
1997	0.240	95
2005	---	---

Source: HDRs 1995, 1999 and 2007.

The GEM value of India is very low. India ranked 95th out of 102 countries. A very poor GEM value indicates that wide gender inequalities exist in India. Neighboring China had a GEM value of 0.491 and ranked 40th. Countries like Sri Lanka and Bangladesh had better scores of 0.321 and 0.304 with rankings 80 and 83 respectively. Only Pakistan in South Asia had a poorer score than India with a rank of 101 and a score of 0.176. Human Development Reports since the year 2000 do not give GEM rankings for India. Norway ranks first in GEM with a value of 0.932.

AMARTYA SEN'S CAPABILITY APPROACH.

According to Amartya Sen, **'Development requires the removal of major sources of unfreedom: poverty and tyranny, poor economic opportunities and systematic social deprivation, neglect of public facilities and intolerance or over-activity of repressive states'**. Basic freedoms continue to be denied to a vast majority of people in spite of long years of developmental activity. Economic poverty and hunger are the consequences of the absence of economic freedom. These observations were made by Amartya Sen in his book **'Development as Freedom'.** He observed that growth rate of GNP is not the ultimate test of success of removing illiteracy, ill-health and social deprivation. The goal of any society should be development and not economic growth. **In order to develop, the sources of unfreedom should be removed. Hunger, entitlement failures and want of capability are the sources of unfreedom.**

Hunger.

Hunger can be removed with the help of rational production and distribution system. Hunger is a fact of life in developing countries. Hunger in the modern world is intolerable because it is not necessary. The modern world has the capability to guarantee food for all. Hence the persistence of hunger is morally outrageous and politically unacceptable. Sen distinguishes past hunger and present hunger as follows:

1. Hunger is a major problem for a large number of people. In contrast, there is a substantial population whose health problem is due to surfeit. Inequality in the consumption of food is not a new problem but the populations in developed countries and a substantial population in developing countries indulge in over-consumption or surfeit. In the past, this was not a problem as affluence was limited to a small minority in the society.

2. Hunger and famine in the modern world are not always caused by a general lack of affluence. They are caused due to extreme inequalities in the society. In the past, hunger and famine were the result of crop failures. However, in the modern world, even in boom

situation, hunger is found to be increasing due to the surfeit of the affluent sections of the society.

3. In a market economy, the ability of a group to command food depends on its comparative economic power and in the modern world the expansion of markets has resulted in greater loss of economic power for some groups.

4. In societies where social security does not exist, wage laborers are affected by changes in the labor market conditions. A decline in wages, food prices remaining constant or an increase in unemployment can be a disaster to the wage laborers. Hiring of wage labor has increased with the spread of capitalism. Victims of famine are found amongst the class of landless wage laborers in the modern times.

5. Rapid advancement in technology has increased agricultural production and standard of living. But technological changes have also caused environmental degradation which has become a big threat to the subsistence of rural population.

6. The State has an important role to fight hunger. In some cases, the State has weakened the power of weaker sections to command food by following rigid policies and hence millions have lost their lives due to avoidable famines. Dreze and Sen, argues that ideology is a creative force which leads to political commitment to fight hunger. But ideological State actions may also be inspired by dogmatic policies in which case large sections of the society may be forced into poverty and deprivation.

Entitlement Failures.

Most of the time food output and availability have been high and yet famines have occurred and a large part of the population has suffered starvation. The issue is therefore not availability but its acquirement by individuals and households. According to Amartya Sen, hunger can be understood in terms of entitlements i.e. what commodity bundles people can make their own. The entitlement approach to hunger concentrates on the determination of command over commodities including food. Thus hunger is cause due to entitlement failure of the people. In every society, people have some command over some commodity bundles. A person has the freedom to choose any of the food bundles. The size of the bundles and their composition directly determine what the person will consume. The set of alternative bundles of commodities over which a person establishes his command may be regarded as this person's entitlement. A person has to suffer starvation if lhs entitlement set does not include a commodity bundle with adequate amounts of food. According to Sen, in the modern world, most people possess only one asset that is labor power. Labor power of a person fails to ensure food to him if he fails to secure employment. The entitlement failure may result due to a fall in person's exchange

entitlements, alienation of land, loss of labor power due to ill health etc. An unfavorable shift in a person's exchange entitlements may occur in the form of loss of employment, fall in wages, rise in food prices, decline of elf employed production and or drop in the price of goods and services he sells.

According to Amartya Sen, recent famines in Asia and Africa were caused by entitlement failures. For instance, during the Bangladesh famine of 1974, the per capita availability of food grains was 15.9 ounces a day as against 14.9 ounces in 1971 and 15.3 ounces in 1972 and 1973. But there was a collapse of entitlements of a large section of population in 1974 due to loss of employment resulting from floods. Chaotic functioning of rice market led to price explosions while the government failed to institute a suitable stabilizing response. In sub-Saharan Africa, food production has registered a steep fall during the last two decades. As a result, these countries have experienced substantial declines in food output per head. But from these countries, not many cases of famines or widespread undernourishment have been reported.

The availability and entitlement approaches to hunger are not mutually exclusive. It is not enough to ensure food output and availability, entitlement is equally important.

Capability.

According to Dreze and Sen, "Capability includes the concerns that are associated with standard of living and more. Living standards relate to the richness of the person's own life whereas a person may value his capability to be socially useful and influential". Sen has used the concept of capability to emphasize the purpose of social action for fighting hunger. When focus is on entitlement, the objective is to provide a particular amount of food to each person. A better approach would be to make it possible for everyone in the society to have the capability to avoid undernourishment and escape deprivations associated with hunger. Dreze and Sen thus argue, "The focus on entitlements which is concerned with the command over commodities has to be seen as only instrumentally important and the concentration has to be ultimately on basic human capabilities."

Focusing on capabilities is important from the point of view of public action to fight hunger. The shift in focus on capabilities from entitlement broadens our attention from command lover food to other influences including the command over commodities which have a substantial impact on nutrition and health. Capability failure results in mortality which is preventable, morbidity that is unnecessary and under nourishment which is escapable. Failure of basic capabilities leads to overall poverty and deprivation. Social security aims at preventing deprivation and vulnerability. However, provision of social security cannot exclusively depend on the operation of market forces or on the initiative of the State.

Public Support – Alternative Strategies.

Alternative strategies as set out by Sen can be stated in terms of income redistribution, provision of employment, poverty alleviation, health scare, education and social assistance for destitution removal without for the results of improvement in standard of living. The success of these programs will depend on a discriminating use of national resources, the efficiency of public services and a redistributive bias in their delivery. Sen has called this approach, the strategy of 'support-led security'. However, Sen's approach is criticized because it is believed that reallocating resources in favor of social services will reduce economic growth and adversely affect future opportunities. The trickle down strategy or the strategy of growth mediated security will not better the living conditions of the common people or lead to capability enhancement. He therefore argues that direct provisioning by the State should assume an important role even when general economic growth mediates security.

The strategy of support led security has been effectively pursued in Sri Lanka, China, Cuba and Kerala in India. It did not require large financial allocations in any of these countries. The commitment of those who were entrusted with the task of implementing these programs towards the deprived sections of the population further ensured the success of this strategy. According to Sen, even the strategy of growth mediated security must involve public support if it aims at enhancing the capabilities of poor. There are many examples of countries with high growth rates of GNP, real incomes and food output with extremely slow improvement in quality of life. Therefore it must be recognized that the job of removing hunger, reducing under-nutrition and morbidity cannot be handed over to un-aimed process of GNP growth.

ENVIRONMENTAL SUSTAINABILITY AND DEVELOPMENT.

Introduction.

Environmental degradation can exhaust the resources on which people depend for their survival. Growing environmental degradation in developing countries can have serious consequences for self-sufficiency, income distribution and future growth potential. By imposing heavy costs on developing countries through health expenses and reduced productivity of resources, environmental degradation can reduce the pace of development in LDCs. The most affected will be the people at the bottom of the pyramid i.e. the bottom 20 per cent of the population. Rising population pressures on marginal land has led to falling farm productivity and per capita food production. Marginal lands are cultivated by lower income groups and falling farm productivity affects therefore the most disadvantaged groups in the society. Poor sanitation and scarcity of clean drinking water are known to be responsible for 80 per cent of the disease worldwide. Improving the productivity of resources, improving living conditions among the poor and achieving environmentally sustainable growth is key to economic development.

Environmental considerations must be factored into policy making decisions. The exclusion of environmental costs from GNP is responsible for the negligence of environmental considerations in development economics. Damage to soil, water supplies and forests can reduce long term national productivity. It is important that the long term consequences of environmental quality be considered in economic analysis. Rapid population growth and expanding economic activity in the LDCs are likely to cause great damage to environment.

The growing consumption requirements of people in LDCs may have global consequences. There is increasing concern in the Middle Income Countries that the destruction of the world's remaining forests which are concentrated in a number of highly indebted LDCs including Brazil, Mexico, Peru and the Philippines will contribute to global warming and the greenhouse effect. In the following sections, the economic causes and consequences of environmental degradation and potential solutions to the cycle of poverty and resource degradation will be examined.

The Fundamental Issues in Environment and Development.

There are seven fundamental issues that define the environment of development. They are: (1) the concept of sustainable development and linkages between the environment and (2) population and resources, (3) poverty, (4) economic growth, (5) rural development, (6) urbanization and (7) the global economy.

Sustainable Development and Environment.

The balance between economic growth and environmental sustainability is explained in terms of sustainable development. Sustainable development refers to "meeting the needs of the present generation without compromising the needs of the future generations. Development is possible if capital assets remain constant or rises overtime. Future growth and quality of life are therefore dependent on the quality of the environment. The natural resource base of a country and the quality of its air, water and land represents a common heritage for all generations. Destroying the heritage in the pursuit of short term economic goals penalizes both present and future generations. It is therefore essential that development policy making factor in environmental considerations. Policy makers may set a goal of net zero loss of environmental assets. It means that if an environmental asset is damaged or depleted in one area, a resource of equal or greater value should be created elsewhere. The total capital assets of a country are the sum of real capital, human capital and environmental capital. Sustainable development therefore would require that the total capital assets should not be decreasing and that the correct level of sustainable national income or sustainable NNP* is the amount that can be consumed without diminishing the total capital stock. Symbolically, **NNP* = GNP – D$_m$ – D$_n$,** where NNP* is sustainable net national product, D$_m$ is the depreciation of manufactured capital assets, and and D$_n$ is depreciation of environmental capital. A better measure of sustainable development

would be: $NNP^* = GNP – D_m – D_n – R – A$, where R is the expenditure required to restore environmental capital and A is expenditure required to prevent destruction of environmental capital.

In view of the depleting environmental resources, meeting the needs of a world population that is projected to grow to 10 billion in the next 50 years will require radical and rapid changes in consumption and production patterns to ensure environmentally sustainable economic development.

Population, Resources and the Environment.

If population continues to grow, the day will not be too far when we will reach the limit beyond which the earth's resources will fall short of supporting the world population. Whether that happens or not, rapid environmental degradation would definitely compromise the ability of present and future generations to meet their needs. A slower growth or even a negative growth rate of population for a few decades may reduce the intensity of environmental degradation. The rate and timing of fertility declines and the size of future world population will depend on the action taken by the governments to create economic and institutional conditions that are conducive to limit fertility.

Rapidly growing populations have led to land, water and fuel wood shortages in rural areas and to urban health problems arising due to lack of sanitation and clean water. Increasing population density has led to severe and rapid degradation of the resources that the poor depended on for their own survival. In order to meet the growing needs of LDCs, environmental degradation must be stopped and the productivity of available resources must be increased to benefit more people. If increases in GNP and food production are slower than population growth, per capita GNP and food self sufficiency will fall. In such a situation, persisting poverty will only increase the fertility rates because the poor are often dependent on large families for their survival.

Poverty and the Environment.

High fertility and poverty are not directly related as evidenced in the case of China. The per acre arable land density of population in China is twice that of India and the productivity per acre is also twice that of India. Environmental destruction and high fertility are directly related and both are the consequence of absolute poverty. Environmental policies in developing countries will succeed only if attention is paid to landlessness, poverty and lack of access to institutional resources. Insecure land tenure rights, lack of credit and inputs and absence of information often prevent the poor from making resource-augmenting investments that would help preserve the environmental assets from which they derive their livelihood. Providing institutional support to the poor is a better solution than fighting environmental decay. **The three objectives of**

economic development are: (1) to increase the availability and widen the distribution of basic life sustaining goods such as food, shelter, health and protection, (2) to raise levels of living, including, in addition to higher incomes, the provision of more jobs, better education and greater attention to cultural and human values, all of which will serve not only to enhance material well being but also to generate greater individual and national self esteem and (3) 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. If these three objectives were to be achieved, environmental sustainability will also be achieved because environmental sustainability and achievement of developmental objectives are co-eval and co-extensive.

Growth versus Environment.

Evidence indicates that the greatest damage to environment is caused by the billion richest and billion poorest people on earth and that the lowest billion are found to be more destructive than all the four billion in between. It means that if the economic conditions of the poorest billion are improved, there will be all round improvements in the environment. However, with all round improvement in income and consumption of all the people on earth, there will be only further destruction of the environment. There is therefore a trade-off between environment and growth. Hence, sustainable development has no alternative and therefore there cannot be uncontrolled economic growth in the countries of the world.

Rural Development and the Environment.

Food production in the developing countries will have to double by 2010 in order to meet the growing food requirements of the growing population. Land in developing countries unsustainably exploited and hence meeting the food requirements will require radical changes in the distribution, use and resource availability to the agricultural sector. Further, rural women are known to be the caretakers of rural resources such as forests and water supplies and provide agricultural labor supply. The rural women must therefore be integrated with the environmental protection programs. Poverty alleviation programs must target women to reduce their dependence on unsustainable methods of production. Increased accessibility of agricultural inputs to small farmers and the introduction of sustainable methods of farming will help create better alternatives to current environmentally destructive use of resources. Investment in land can increase the agricultural output and ensure future food self sufficiency.

Urban Development and the Environment.

The cities are the epicenters of growth and development. More and more growth means more and more cities and a continuous flow of migration from rural to urban areas. However, with the number of growth centers being limited to a few, these growth centers are seen to be bursting at their seams. Governments are not prepared to meet the requirements of overcrowded cities. The urban infrastructure consisting of water supply, sanitation, transport and communication systems are under increasing stress and inadequate supply of these services are posing health hazards to the urban population. The growth of slums in large cities of the developing countries with more than fifty per cent of the populations residing them are not only exposed to all kinds of health hazards but also are exposed to a morally degrading social environment. Since the slums are essentially illegal habitations, civic services are either not provided or they are meagerly provided. Lost productivity of sick workers, contamination of existing water resources, destruction of infrastructure, increasing fuel and transport expenses, long and tiring journeys from place of residence to place of work are some of the social costs associated with poor urban conditions. **Evidence indicates that the marginal environmental costs are increasing in urban areas as a result of a marginal addition to the population of urban areas.**

The Global Economy.

With future increases in world population, environmental destruction will only increase. Hence, some trade-offs will be required to achieve sustainable development. By efficient use of resources, a number of environmental changes will provide economic savings. But many essential changes will require heavy investments in pollution reduction technology and resource management and significant trade-offs between output and environmental improvements will become necessary. Poorer countries will find it difficult to absorb the costs. Issues such as bio-diversity, rain forest destruction and population growth will focus international attention on some of the poorest countries in the world. In the absence of substantial assistance to LDCs, environmental efforts will have to be funded at the expense of other social programs such as education, health services and employment schemes and these social programs also have important implications for the preservation of the global environment.

The greatest contribution to environmental destruction has been made by the developed world. However, with high fertility rates, rising average incomes and increasing inequality in the developing world, global environment will have one more enemy in the form of developing countries. The issue is therefore, as to who should pay for creating a sustainable environment. Dividing responsibility for reducing environmental damage is a difficult task. For example, if a limit is placed globally on levels of per capita pollution emissions, the approach will favor LDCs that have much lower per capita consumption levels. Alternatively, if the growth rate of per

capita emission is limited by international pressures or limits are imposed on the growth of national emissions, incomes in the developing world will freeze at their existing levels.

POLICY OPTIONS FOR SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES.

The developing countries have a number of policy options that can be implemented for achieving sustainable development. Six policy options believed to be more effective are (1) Proper resource pricing, (2) Community involvement, (3) Clear Property Rights and Resource Ownership, (4) Improving economic alternatives for the poor, (5) Raising the economic status of women, and (6) Policies to reduce industrial emissions.

Proper Resource Pricing.

Government's pricing policy can increase resource shortages or encourage unsustainable methods of production. The rich have frequently been the largest beneficiaries of energy, water and agricultural subsidies. Even though elimination of misdirected subsidies is a relatively costless way of protecting the environment, the political costs are high where powerful elites stand to lose lucrative government transfers.

Community Development.

Programs to improve environmental conditions are likely to succeed if local communities are roped in implementing the programs and if such programs are designed to satisfy local and national objectives. Grass root efforts are more cost effective because they involve the use of low cost alternatives and provide jobs to local populations. When poor communities benefit from public works programs, residents are often willing and able to contribute much or all of the program costs.

Property Rights and Resource Ownership.

Investments in household sanitation and water and on-farm improvements represent a large portion of lifetime savings for the poor, the loss of which can impose harsh economic consequences on households. Hence the lack of secure tenure on rural or urban property can greatly hinder investment in environmental upgrading. Legalization of tenure can lead to improved living conditions for the poor and increases in agricultural investments. It is not uncommon for sharecroppers to lose the economic gains from their on-farm investments because it is relatively easy for landlords to extract higher rents once the productivity of the land has been improved. Transferring title to tenants may be the only means of ensuring that financial rewards from land augmenting investments accrue to the investor. Land reform may be required where

unequal distribution of land has led to large tracts of uncultivated high quality land in close proximity to overexploited marginal lands cultivated by large numbers of landless workers.

Programs to Improve the Economic Alternatives of the Poor.

Environmental destruction in rural areas may be avoided through on-farm investments in irrigation and sustainable farming techniques, use of alternative fuels and the creation of barriers to erosion. The economic costs of these alternatives are very high and hence prohibitive to the vast majority of poor family producers. With greater environmental destruction, the rural population will be less likely to be able to afford alternative methods of production. It is therefore important that government programs make credit and land augmenting inputs accessible to small farmers. By providing rural economic opportunities outside the home, governments can also create alternative employment opportunities so that the very poor are not forced to cultivate marginal lands. For example, programs to build rural infrastructure like roads, storage facilities etc, create local jobs, alleviate population pressures on ecologically sensitive land, stimulate rural development and reduce the flow of rural to urban migration.

Raising the Economic Status of Women.

Improving educational attainment of women and increasing their economic alternatives will increase the opportunity cost of their time and may lead to a smaller family size. Education will also increase women's access to information concerning child nutrition and hygiene which would reduce infant and child mortality. Community based environmental programs must work closely with women because their own day to day activities may largely determine patterns of resource use and their ability to meet the needs of their families is dependent on the sustainable management of water and fuel supplies.

Policies to Reduce Industrial Emissions.

A range of policy options is available to LDC governments for the purpose of limiting industrial pollution, including the taxation of emissions, tradable emissions permits, quotas and standards. There is evidence to suggest that the first two policies which are market based are more effective because they tend to reward the more efficient producers, allow greater flexibility for firms land are generally easier to enforce. Regulations must be simple and enforceable. Incentives to adopt clean technologies may be provided through tax credits and subsidies specifically tied to the purchase or development of pollution reducing technologies. Unfortunately, the hardest industries to regulate are run by governments because the profit motive is not a consideration and as a general rule it is difficult for any group to regulate itself.

POLICY OPTIONS FOR DEVELOPED COUNTRIES FOR SUSTAINABLE DEVELOPMENT.

The developed countries who consume more than 70 per cent of the earth's resources can contribute to global environmental improvement by reducing harmful emissions, developing clean technologies and by changing their environmentally harmful patterns of demand. Table 1.5 shows per capita consumption of various goods in selected high, middle and low income countries. The United States and other developed countries consume a disproportionate share of environmentally sensitive products such as ocean fish and raw materials. A substantial part of developed country consumption is wasteful. Responsible consumption by the developed countries is an ecological necessity. The patterns of consumption must change.

Table 1.5: Consumption in Selected High, Medium and Low Income Countries

Country	Value of Annual Private Per Capita Consumption (in PPP USD) (1997)	Fish (Kg) (1997)	Meat (Kg) (1998)	Cereals (Kg) (1997)	Paper (Kg) (1998)	Fossil Fuels (Kg of oil equivalent) (1997)	Passenger Cars (Per 1000 people) (1996)
United States	**21,680**	**21.0**	**122.0**	**975.0**	**293.0**	**6,902**	**489.0**
Singapore	16,340	34.0	77.0	159.0	168.0	7,825	120.0
Japan	15,554	66.0	42.0	334.0	239.0	3,277	373.0
Germany	15,229	13.0	87.0	496.0	205.0	3,625	500.0
Poland	5,087	12.0	73.0	696.0	54.0	2,585	209.0
Trinidad/Tobago	4,864	12.0	28.0	237.0	41.0	6,394	94.0
Turkey	4,377	7.2	19.0	502.0	32.0	952	55.0
Indonesia	1,808	18.0	9.0	311.0	17.0	450	12.2
China	1,410	26.0	47.0	360.0	30.0	700	3.2
India	**1,166**	**4.7**	**4.3**	**234.0**	**3.7**	**268**	**4.4**
Bangladesh	780	11.0	3.4	250.0	1.3	67	0.5
Nigeria	692	5.8	12.0	228.0	1.9	186	6.7
Zambia	625	8.2	12.0	144.0	1.6	77	17.0

Source: World Resource Institute, 2001 World Resources Report (Washington DC, WRI).p.27. (p529, Economic Development by Michael P Todaro & Stephen Smith, 8th edition).

Emission Controls.

The developed countries announce their commitment to a cleaner environment because they are the main polluters of air and sea. They must reduce the production of greenhouse gases and ozone depleting chemicals to set an example before the developing countries in order to bring about global commitment to cleaner environment.

Research and Development.

The developed countries must take a leadership role in research and development activity. Innovations resulting from research and development will enhance LDC efforts to reduce emissions if they are adopted in developing countries. At present, many clean technologies are very expensive for the developing countries. It is therefore unrealistic to expect LDCs to achieve standards set in high income countries. However, LDCs can avoid environmental hazards experienced by the advanced countries. Making cheaper, cleaner abatement technologies accessible to LDCs can help limit a principal source of global emissions resulting from the rapid industrialization of LDCs.

Import Restrictions.

By importing products that are related to environmentally unsustainable production, the rich countries have an indirect but important impact on the global environment. International treaties to limit the destruction of endangered resources will have little effect if rich nations continue to provide lucrative markets for the sale of such goods. Import restrictions are an effective way of reducing undesired international trade. Consumer sovereignty expressed through boycotts and other forms of pressure on corporations can be effective.

MARKET AND STATE AS AGENCIES OF DEVELOPMENT.

The Role of the Market.

The free market economy is a theoretical construct because no so called free market economy can function efficiently without the intervention of the State. However, in a market economy, the intervention of the State is limited to the areas of market failures and hence market economies are known to be free market economies. A market economy answers the three fundamental questions that form the economic problem through a market system: What to produce? How to produce? Whom to produce? The market system is based on the market forces of demand and supply of goods and services. Demand and supply determine prices and prices act as signals to both producers and consumers. The market system depends on a number of factors for its efficient working. These factors are the profit motive, adequate information, price mechanism and factor mobility. The profit motive provides the incentive for entrepreneurship and enterprise. Adequate information is required to make decisions to produce and to consume i.e. the information required by producers and consumers should be available in the right time and in right measure. Factor inputs must be mobile geographically and between different uses. Profit motive is the pivot around which the market system revolves. Entrepreneurs are encouraged to take risks and produce goods and services by the prospect of making profits.

Profits made by entrepreneurs depend on correctly identifying the level of demand for the goods and services and their ability to manage production efficiently. Finally profits depend upon revenue maximization and cost minimization and in order to maximize profits, entrepreneurs need reliable and authentic information so that inputs are obtained at minimum prices and production is efficiently organized. Consumers also need authentic and reliable information the right choices. **The price mechanism in a market economy therefore has an important and crucial role in performing the role of a signaling mechanism to both consumers and produces.**

Market Failure.

The term **market failure** describes the failure of the market economy to achieve an efficient allocation of resources. Prices must properly reflect the costs and benefits of production and consumption i.e. prices must include all the positive and negative externalities that are associated with production and consumption. However, in case of merit and demerit goods and in case of public goods, the price mechanism fails to register externalities correctly and hence State intervention in the market economy is warranted. If we assume that prices accurately reflect costs and benefits, decisions made by both producers and consumers will lead to an efficient allocation of resources and maximization of economic welfare or economic efficiency. Economic efficiency can only be achieved if resources are perfectly mobile between uses.

Consumer sovereignty is important to the market system. Consumer choices reveal their tastes and preferences and ultimately determine the goods and services that are produced in the economy. Freedom of enterprise and consumer sovereignty provides the mechanism through which the market system operates. The market system is very dynamic. It is constantly changing and evolving as new products and services come and go and new ideas and innovations take over. **The pace of change is rapid and if there is inadequate or unreliable information, markets fail to operate efficiently.** Profit motive on the part of producers and maximum economic welfare on the part of consumers drive both producers and consumers alike to make the market system more dynamic and more efficient as far as allocation of resources is concerned. Notwithstanding the virtues of the market economy, there are serious cases of market failures and these failures can only be corrected by State intervention. **Some of the important market failures happen in the case of merit and demerit goods and in the case of public goods.**

1. MERIT AND DEMERIT GOODS.

A merit good is defined as a good that is better for a person than the person who may consume the good realizes. For example, education is a merit good. The individuals who make decisions about how much education to receive or how much to allow their children to receive do not fully appreciate quite how much benefit will be received through being educated. We do not appreciate how good education is for us. We do not perceive its full benefits at the time of making the decision about how much education to receive.

Demerit goods are those products that are worse for the individual consumer than the individual realizes. Cigarettes are taken to be a typical example. It is suggested that when a person makes a decision to smoke a cigarette he or she is not fully in possession of the information concerning the harmful effects of smoking. If he or she were in possession of such information then there would be a greater reluctance to smoke.

Problems caused by Merit and Demerit Goods.   The market mechanism fails when it comes to merit and demerit goods. The market mal-allocates scarce resources to the production of these goods. In case of merit goods, resources are under-allocated and in case of de-merit goods, resources are over-allocated. Figures 1.1 and 1.2 indicate under-production of a merit good and over-production of a demerit good respectively.
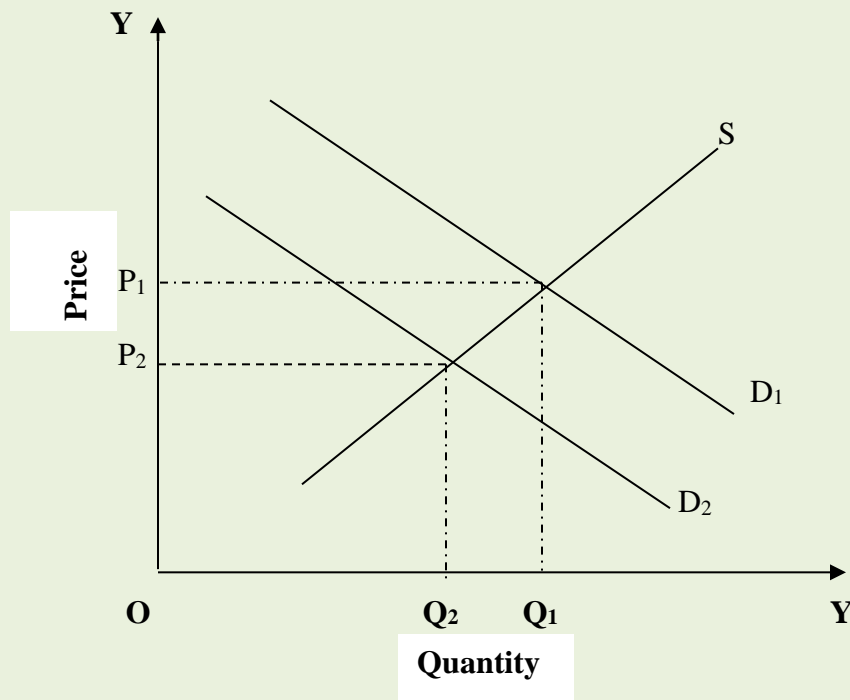
Fig. 1.1- Under provision of a merit good by the market
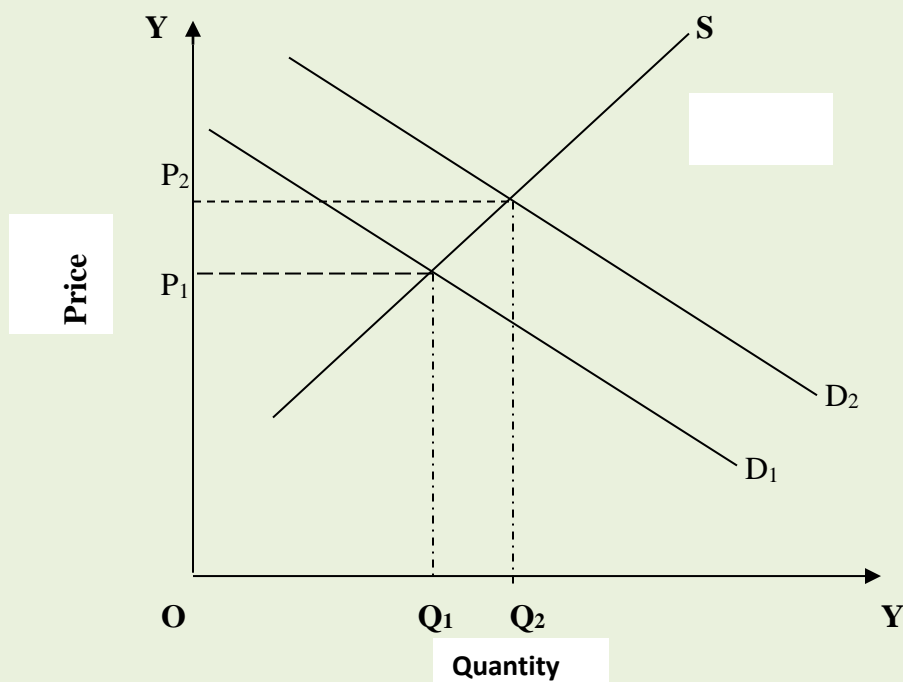
Fig. 1.2 - Over provision of a demerit good by the market.

Figure 1.1 indicates that the correct level of demand if consumers appreciated the true value of the product would be D_1 leading to a market price of P_1 and optimum quantity of good will be produced at Q_1. Since consumers under-value the product, demand is only registered as D_2 leading to a market price of P_2 and Q_2 output which is below the optimum level. The market therefore fails. Figure 12.2 shows the opposite case of a demerit good. Here the correct demand should be D_1, price P_1 and output Q_1. As consumers overvalue the product, demand is registered at the higher level of D_2 with P_2 price and Q_2 output. As excessive resources are allocated to the production of demerit good, the market has failed.

2. EXTERNALITIES AND ALLOCATION OF RESOURCES.

Externalities lead to mal-allocation of resources. The free market will either produce more of a good or less of a good. Thus there will be either overproduction or under production.

Overproduction Caused by a Negative Externality.

For example, a firm which produces chemicals may take into account costs of raw materials, labor costs and energy costs because these costs are private costs and therefore are paid by the

firm. However, there are social costs involved in manufacturing chemicals. For example, dumping of chemical waste in a local water body which may create clean up costs, air pollution and consequent ill health and road congestion that result from transportation of the chemicals. All these are negative externalities. The firm will take into account only private costs and the external or social costs will not be taken into account. This will mean that the price will be lower than if all social costs were taken into account. In turn, demand and production will be higher than if the full social costs had been considered. Thus a negative externality will lead to too much of a product being produced. The situation can be seen in the following figure 1.3.
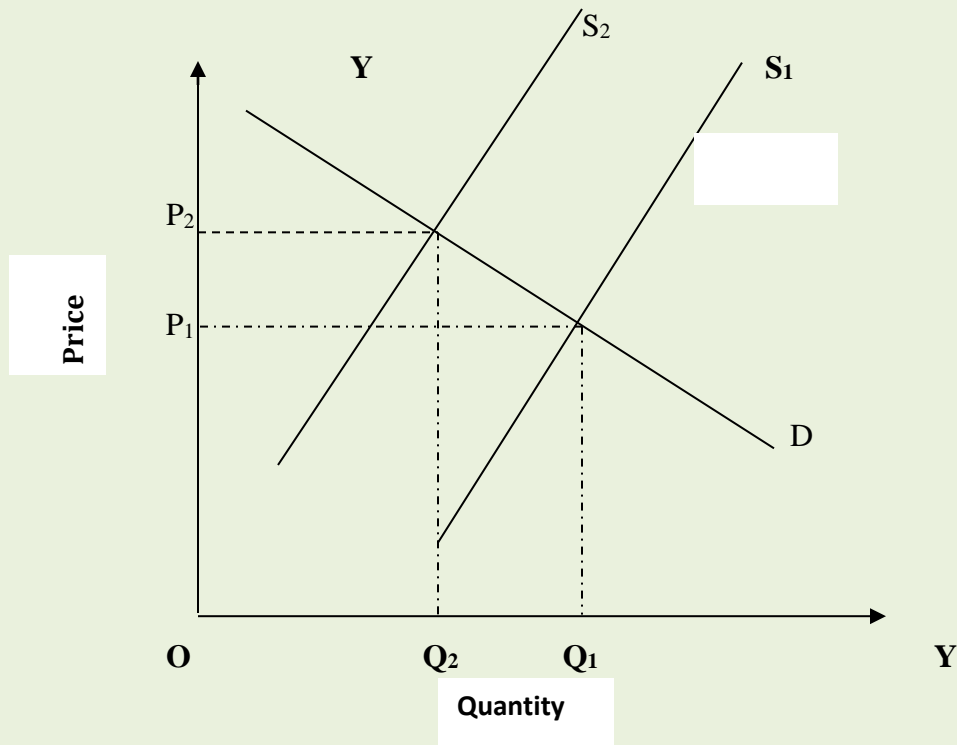
Fig. 1.3 - Over production caused by a negative externality.

The free market equilibrium price is P_1 and quantity demanded and supplied is Q_1. When social costs are added to the private cost of output, the supply curve shifts to the left and a higher price P_2 is determined. At price P_2, a lesser quantity of output Q_2 is supplied and demanded. Negative externality leads to overproduction equal to $Q_1 - Q_2$. The free market fails to take into account negative externality associated with the production of chemicals and allocates more than optimal resources.

Under production Caused by a Positive Externality.

When a product has a positive externality or social benefits are greater than social costs, the free market tends to allocate less than optimal resources. This is shown in the following figure 1.4.
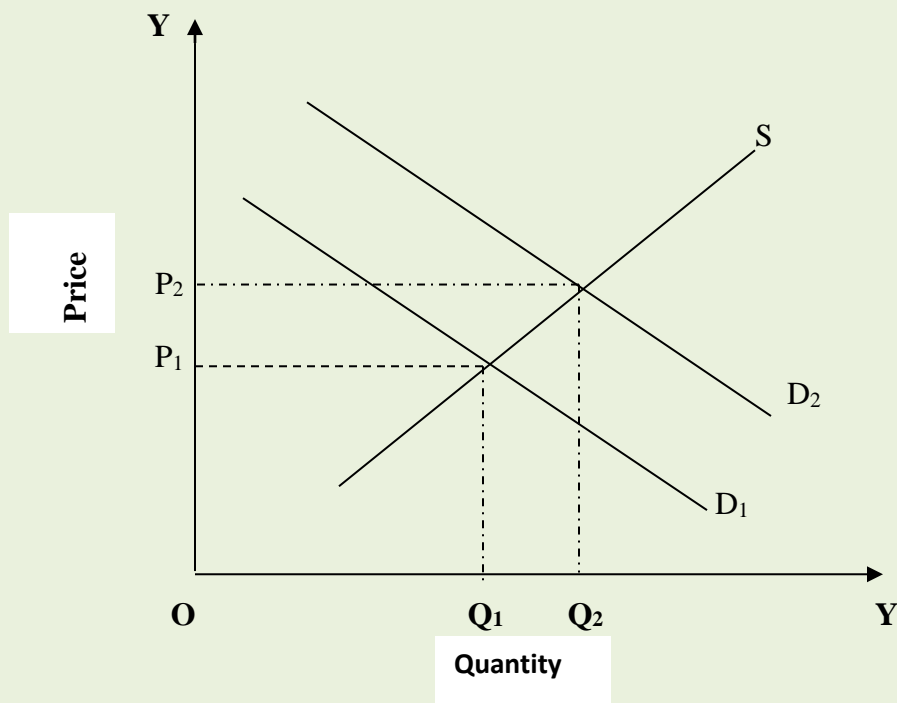
Fig. 1.4 - Under production caused by a positive externality.

The free market considers only the private benefits and accordingly demand curve D_1 is drawn. Based on the supply schedule, price P_1 is determined and equilibrium output Q_1 is determined. When social benefits are added to private benefits, the demand curve will shift to the right (however social benefits will not be considered by private decision makers) and the new equilibrium price and quantity will be P_2 and Q_2. This analysis shows that when markets are left to themselves, a commodity with positive externality will be under produced to the extent of $Q_1 - Q_2$. Less than optimal resources are allocated and hence the market fails even in the case of a positive externality.

It is thus proved that externalities causes market failures. Resources are either over allocated or under allocated to the production of certain goods.

3. PUBLIC GOODS.

According to Paul Samuelson and William Nordhaus, *"Public goods are those goods whose benefits are indivisibly spread among the entire community, whether or not people desire to purchase it".* For example, the police machinery extends equal protection to all the members of the society whether or not people desire to make use of the machinery. Similarly, defense services, roadways, the judicial system etc are examples of public goods. Public goods have two important characteristics. They are non-rival in consumption and they are non-excludable.

A good is non-rival in consumption when more than one person can consume the same thing without reducing the consumption of any other person. Public goods like defense, police machinery, roads, judicial system etc are all non-rival in consumption because people can consume these services to the extent of their needs without reducing the consumption of others.

A good is non-excludable when people cannot be prevented from enjoying its benefits. For example, a public garden, public health, public education etc. These goods and services are available to all even if no payment is made.

In contrast to public goods, private goods are rival in consumption. For example, if one person is working on a personal computer, the other person cannot use it at the same time without reducing the consumption of the first person. There is a trade off involved in private goods. Similarly, if one person is drinking a can of beer, the other person cannot drink beer from the same can. Thus private goods are divisible in consumption and somebody has to pay for it. Private goods are also excludable. For instance, a person will be admitted into a movie theatre only if he has a valid ticket. A private good is therefore rival or divisible in consumption and is also excludable.

The Problem caused by Public Goods.

The free market may fail to produce public goods. There may be consumers willing and able to pay for public goods, but the free market may not produce them. Markets cannot provide public goods because of the problem of free riders. Consumers attempt to gain a free ride on the back of other consumers of the public good. For example, if a fisherman decides to put up a light house close to some dangerous rocks for his benefit, all other fishermen in the area will benefit equally from the lighthouse without paying for it and thus get a free ride. If everybody follows a policy of wait and watch as to who puts up the light house, the light house will never come to existence. The existence of public goods may thus mean that scarce resources are not used in a way that would be desirable. People may wish for the provision of such goods, but the demand may never be registered in the market.

4. Income inequalities.

Market economies tend to generate wide income inequalities. There is a problem of plenty amidst penury. For instance, even after six decades of planned economic development and

growth, India continues to have about 26 per cent of its population living below the international poverty line with the top twenty per cent of the population having a share of 46 per cent in the national income and the bottom 20 per cent with only eight per cent share in the national income. Wide income inequalities may lead to a range of social and economic problems.

5. **Imperfect Information.**

Imperfect information leads to shortages and surpluses in the economy. For instance, theoretically, in a free market economy, unemployment should not occur because wages would adjust to absorb the surplus labor. However in reality, wages may not adjust downwards to absorb the surplus labor. Further, there may be a number of factors that may prevent labor from moving from one occupation to another i.e. to say that labor is not perfectly mobile between uses or occupations and between regions.

STATE INTERVENTION IN THE MARKET ECONOMY.

Governments intervene in the market because the market fails in providing public goods, it over-produces demerit goods and under-produces merit goods. Government intervention in the market helps to correct market failures and achieve an equitable distribution of resources in the economy.

Government policy and methods of intervention can be grouped under four broad headings. They are regulation, financial intervention, production and transfer payments. The method chosen will depend on whether the reason for intervention is concerned with market failure or with the desire to achieve equity.

1. **Regulation.**

The government uses many methods of regulation as a means of controlling a market. Legal and other methods are used to control the quality and quantity of goods and services that are produced and consumed. For example, the government may regulate the sale of certain drugs by making them only available on prescription from a qualified doctor. Hygiene laws set standards for the production of foods. There may be controls on shop opening hours or the setting of a minimum age at which a person can buy certain products such as alcohol, cigarettes and lottery tickets.

2. **Financial Intervention.**

Financial instruments such as taxes and subsidies are also used by the government to influence production, prices of commodities, incomes or the distribution of wealth in an economy. Price subsidies may vary. They might in the form of partial subsidy in the case of public transport or

total as in the case of free eye tests for children in full time education. Tax instruments may also vary. For example vehicle excise duty is paid once every six months or year unless the vehicle is more than 25 years old. The same amount is paid whether the car is used daily or only once a month. In addition vehicle users pay a tax on petrol. In this case, the amount of tax paid rises with the number of miles driven. The first type of tax may deter ownership of a vehicle while the second deters use of the vehicle. Governments also provide finance that is needed to produce a good or service. For example, the government could finance education but all schools, colleges and universities could be privately owned and run.   Health care may be provided free but the drugs used in prevention and cure of illness could be privately produced.

Use of Indirect Taxes and Subsidies by the Government to Deal with the Problem of Externalities.

The use of taxes and subsidies to deal with the problems of market failures caused by externalities is a case of financial intervention. A tax is imposed on the firm which creates externality. Once tax is imposed, the externality is internalized or the external cost of production is added to the private cost. The following figure shows how taxation is used by the government to internalize external cost.
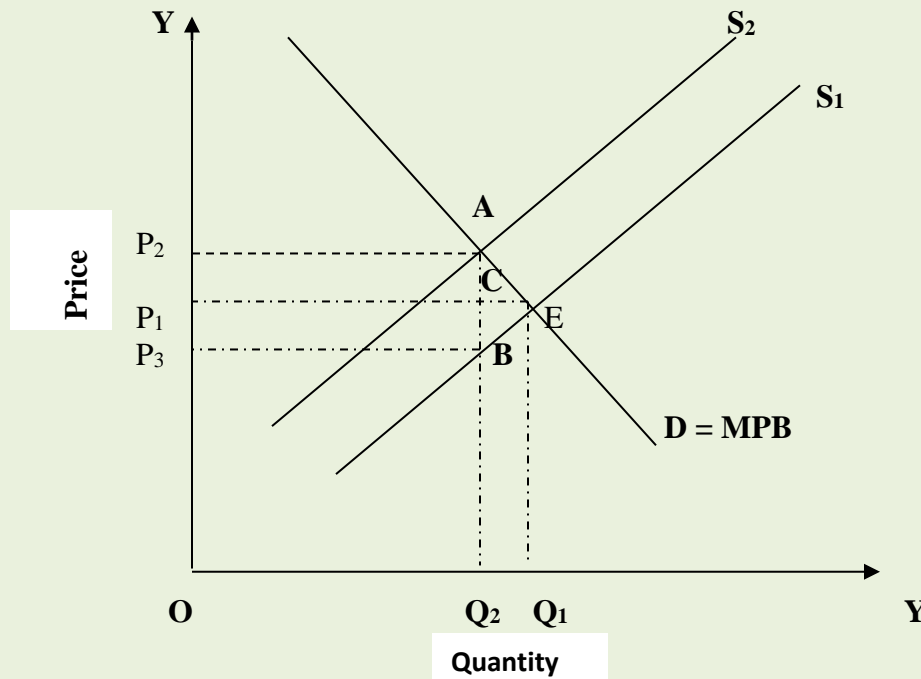
Fig. 1.5 - External Cost and Use of Taxation.

Financial intervention by giving subsidies to correct market failure caused by external benefits or positive externalities can be explained as under.
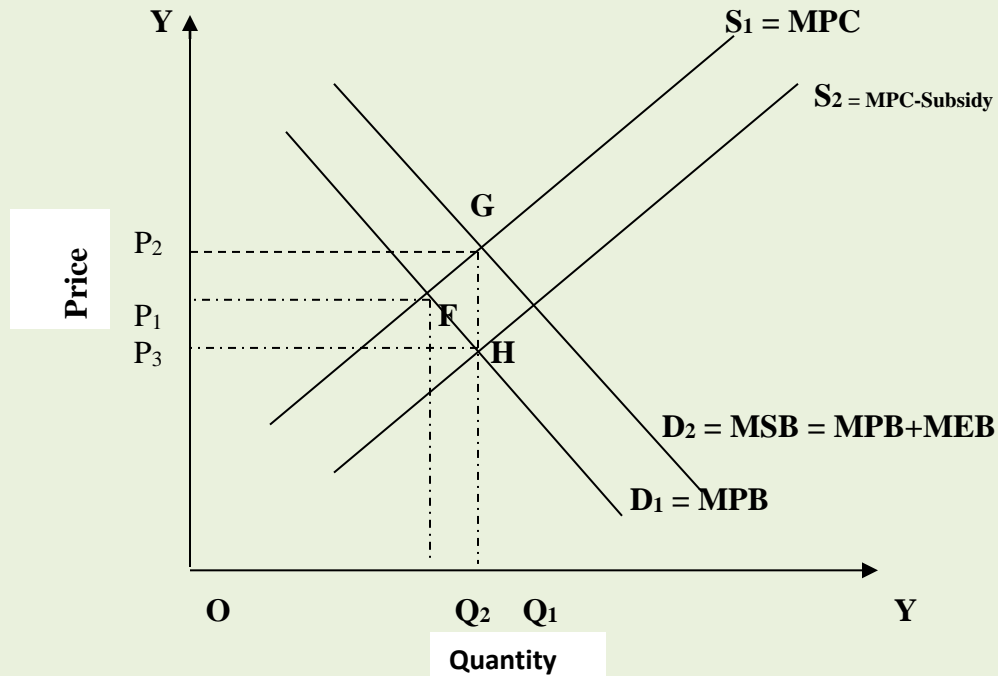
Fig. 1.6 : External Benefits and Use of Subsidies.

The equilibrium before government intervention is at point F where MPB = MPC or Demand is equal to supply. When marginal external benefit is added to the MPB curve, the MPB curve shifts to the right and D_2 = MSB curve is obtained. The MSB curve represents society's demand for the product. If the government subsidizes the production of this product then the supply curve moves to the right from S_1 = MPC to S_2 = MPC – Subsidy. The marginal cost of supplying the good is reduced by the amount of subsidy and the vertical distance GH is equal to the value of the subsidy. The equilibrium after the subsidy is given by point H where D_1 intersects the supply curve S_2 and the optimal amount of goods Q_2 is sold by the market.

3. State Production.

Government may take over the production of a good or service either in whole or in part. Industries such as the electricity, coal mining and railway are entirely owned and managed by the State in many countries. It is also very common to find some goods and services being produced by both the State and the private sectors. Education and health care, for example, are provided both publicly and privately.

4.   Income and Other Transfers.

Income transfers are used by governments as a means of redistributing income or transferring income from one group in society to another group for example from people in work to those who are retired or from relatively rich people to those who are in poverty. The justification for these transfers is to achieve fairness or equity in an economy. These transfers of income may be in the form of a cash benefit paid by the government to someone with a low income. Income transfers may also be used to cover the unexpected loss of income when a person is not working due to illness or unemployment. These cash transfers include social security benefits such as income support, job seeker's allowance or a State pension.

Questions.

1. **Describe the importance of HDI. How is it calculated? What are its limitations?**
2. **Explain the difference between growth and development.**
3. **Write a note on environmental sustainability and development.**
4. **Write a note on Sen's Capabilities Approach.**
5. **Explain the meaning of market failure. What role can State play in rectifying market failure?**

CHAPTER – 2

CLASSICAL THEORIES OF DEVELOPMENT

PREVIEW.

- **Rostow's stages of growth.**
- **Harrod-Domar growth model.**
- **Structural change and Lewis' model of unlimited supplies of labor.**
- **Solow's growth theory.**

INTRODUCTION.

After the Second World War, four major approaches to economic development were put forward by development economists. These approaches are:

1. The linear stages of growth model (Rostow's stages of growth and Harrod-Domar growth model).
2. Theories and patterns of structural change (Lewis' model of unlimited supplies of labor).
3. The international-dependence revolution, and
4. The neo-classical free market counter-revolution (Solow's growth theory).

The linear stages of growth model developed in the 1950s and 1960s viewed the process of development as a series of successive stages of economic growth through which all countries must pass. According to these theories of economic development, the right quantity and mixture of saving, investment and foreign aid were enough to enable developing countries to follow the growth path of developed countries. Development was considered as a process of rapid aggregate economic growth.

In the 1970s, the linear stages approach was replaced by two new theories, namely: patterns of structural change and the international dependence revolution. Theories and patterns of structural change approach to development used modern economic theory and statistical analysis to study the internal process of structural change that a developing country must undergo in order to achieve sustained rapid economic growth.

The international dependence revolution viewed underdevelopment in terms of international and domestic power relationships, institutional and structural economic rigidities and the rising number of dual economies and dual societies both within and among the nations of the world. Dependence theories emphasized external and internal institutional and political constraints on economic development. The need for major new policies to eradicate poverty, to provide more diversified employment opportunities and to reduce income inequalities was emphasized. These objectives were to be achieved within the context of a growing economy without singularly emphasizing economic growth as in the case of linear stages and structural change models.

The neo-classical free market counter-revolution approach was developed in the 1980s and the 1990s. It is also sometimes called the neo-liberal approach. This approach emphasized the beneficial role of free markets, open economies and the privatization of inefficient public enterprises. Failure to develop is not due to exploitive external and internal forces as proposed by dependence theorists but because of excessive government intervention and regulation of the economy. The modern approach to economic development is eclectic. It draws on all these approaches.

ROSTOW'S STAGES OF GROWTH.

The Stages of Growth model was propounded by the American economic historian Walt W Rostow. According to him, the transition from underdevelopment to development can be described in terms of a series of stages through which all countries must proceed. The stages of economic growth as described by Rostow in his book "The Stages of Economic Growth – A non-communist Manifesto (1960)" are as follows:

1. The traditional society.
2. The pre-conditions for take-off.
3. The Take-off.
4. The drive to maturity, and
5. The age of high mass consumption.

The Traditional Society.

In a traditional society, farm output can be increased only through extensive cultivation. Innovations are carried out in a sporadic manner. Industrial progress is limited due to the lack of adequate scientific knowledge. Labor productivity is low. Agriculture is predominant and the hierarchical social structure prevented vertical mobility. Technical innovations are carried out in an ad-hoc manner. Population, trade and quality of life depended upon nature and political conditions. The society is self-sufficient and political power is concentrated in the hands of the land owning class. Economic surplus was wasted on construction of monuments and observance

of religious rituals. The traditional society was more or less stagnant, reproducing itself without any significant change.

The Pre-conditions for Take-off.

In the second stage, the traditional societies are in the state of transition from agricultural societies to industrial societies. The pre-conditions appeared in Great Britain and Western Europe in the 16th century when the modern age is believed to have begun. Pre-conditions in Western Europe can be explained in terms of Renaissance and Reformation with a reformed monarchy and a new world. Feudalism came to an end and national states came into existence. Trade and commerce are enlarged and surpluses are invested. When the rate of investment is greater than the rate of growth of population, per capita productivity increases and capital formation takes place. The surplus generated in the agricultural sector is used to fuel industrial development. The government must develop social overhead capital. Centralized national states must come into existence before the take-off stage.

The Take-off.

In this period, growth becomes a natural condition. The rate of investment goes up from five per cent to 10 per cent of NNP. Manufacturing sectors with high growth rates come into existence and the establishment of a political, social and institutional framework ensures economic growth is sustainable. The compound interest phenomenon not only makes growth sustainable but also helps it to progress geometrically. The take-off also requires enterprising people in the society to carry out innovations. It also requires substantial investment. The take off period lasts for about two decades. According to Rostow, the take-off stage for countries like India and China began in 1952 whereas for Russia, it was during the period 1890-1914 and for the US, it was 1843-1860.

The Drive to Maturity.

It is the period when a society has effectively applied the range of modern technology to the bulk of its resources. It produces anything it wishes. It is a period of long sustained economic growth taking place over a period of four decades. The economy is able to withstand unexpected shocks. During this stage, the agricultural work force declines to 20 per cent, industrial barons are replaced by professional managers and people in general begins to think about the social costs of the drive to maturity. According to Rostow, some advanced countries had arrived at maturity. For instance, Great Britain in 1850, the US in 1900 and Russia in 1950 reached the stage to maturity.

The Age of High Mass Consumption.

In this stage, economic prosperity is taken for granted and emphasis is placed on consumption and welfare. The society seeks a balance between the three major objectives of external power and influence, egalitarian society and supra-basic consumption. The tendency towards mass consumption of durable consumer goods, continued full employment and increasing sense of security has led to a higher rate of population growth in such societies. According to Rostow, the US was the first to reach this stage in the early 20th century with Western Europe and Japan reaching this stage in the 1950s.

Beyond High Mass Consumption.

The developed countries continue to be in the age of high mass consumption. Some Scandinavian countries according to Rostow are close to the end of this stage. Rostow finally suggests that people should attempt to find ways to eliminate boredom or secular spiritual stagnation that is experienced at the end of the age of high mass consumption.

Critical Evaluation of Rostow's Theory.

The process of growth and development is neither uniform nor linear across time and space. Historical evidence suggests that there is no uniformity in the development experience of the countries of the world. Rostow's theory is criticized on the following grounds:

1. **Lack of Factual Evidence.** Cairncross says that, Rostow's theory lack empirical or factual evidence. The data used by Rostow pertains to only about 12 countries and the statistical data is found to be incomplete. Rostow's generalizations were tested by economists like Kuznets and were found to be invalid.

2. **Traditional Society need not be the first stage of Development.** Countries like the US, Canada, New Zealand and Australia did not have traditional societies and they derived the pre-conditions from Great Britain who was instrumental in transplanting the pre-conditions of development in these countries. This shows that development need not be sequential or linear. Countries can frog-jump stages and begin from a higher level.

3. **Developing Countries remain underdeveloped in spite of High Savings and Investment.** Rostow stated that India took-off in 1952 because the rate of savings and investment was more than 10 per cent of the GDP. Since then the savings and investment rate has steadily grown to over 36 per cent of the GDP. The rate of growth since the 1990s has been very high. Even after more than 50 years of planned economic development, India remains an under-developed country. What is true of India is also true of most of the developing countries of Asia, Africa and Central America.

HARROD-DOMAR GROWTH MODEL.

The model is based on the experiences of advanced capitalist economies and it analyses the requirements of steady growth in such economies.

In order to keep the productive capacity of the economy intact, it must save to provide for capital depreciation (buildings, equipment and materials). In order to achieve growth, net investment is requirement to be made. Net investment (Gross investment minus depreciation) leads to net addition to the available capital stock. The Harrod-Domar model assumes that there is a direct relationship between the size of the capital stock (K) and total GNP (Y). For example, if Rs.3 of capital is necessary to produce Re.1 of GNP, it means that any net addition to the capital stock in the form of new investment will bring about corresponding increases in the flow of national output (GNP) i.e. Rs.3 invested will lead to Re.1 increase in national income. In percentage terms, it means that if three per cent of the national income is saved and invested annually, the economy will grow at the rate of one per cent per annum. The relationship between net investment and output is known as Capital-output Ratio. In our example, this ratio is 3:1. Denoting the capital-output ratio as (k) and the national savings ratio (net domestic savings) as (s) which is a fixed proportion of national output (e.g. 6%) and assuming that new investment is determined by the level of total savings, the model of economic growth as set out by Harrod-Domar can be constructed as follows:

1. Saving (S) is some proportion (s) of national income (Y) so that we have the following equation:

$$S = sY \qquad \qquad \text{.......} \quad (1)$$

2. Net investment (I) is defined as the change in the capital stock (K). It is denoted by ΔK so that:

$$I = \Delta K \qquad \qquad \text{........} \quad (2)$$

Since the total capital stock (K) has a direct relationship to total national output (Y) as expressed by the capital output ratio (k), it means,

$$\frac{K}{Y} = k$$

or

$$\frac{\Delta K}{\Delta Y} = k$$

or $\qquad\qquad \Delta K = k\Delta Y$ …………… (3)

3. Since net national savings (S) must equal net investment (I), we can write this equation as:

$$S = I \qquad\qquad\qquad\qquad …………… (4)$$

From equation (1), we know that $S = sY$ and from equations 2 & 3, we know that:

$$I = \Delta K = k\Delta Y$$

We can therefore write the 'identity' of saving investment equality shown by equation (4) as:

$$S = sY = k\Delta Y = \Delta K = I \qquad …………..(5)$$

Or $\qquad\qquad sY = k\Delta Y \qquad\qquad …………..(6)$

Dividing both sides of equation (6) first by Y and then by k, we obtain the following equation:

$$\frac{\Delta Y}{Y} = \frac{s}{k} \qquad\qquad …………..(7)$$

Note that the left-hand side of Equation (7), $\Delta Y/Y$, represents the rate of growth of GNP.

Equation (7) states that the rate of growth of GNP ($\Delta Y/Y$) is determined jointly by the national savings ratio (s) and the national capital-output ratio (k). It says that in the absence of government, the growth rate of national income will be directly related to the savings ratio and inversely related to the nation's capital-output ratio.

In order to grow, economies must save and invest a certain proportion of their GNP. Greater the saving and investment and lower the capital output ratio, higher will be the rate of growth of the economy. The addition to the national output from an additional investment can be measured by the inverse of capital-output ratio (1/k) which can be termed as the output-investment ratio. It means that the rate of new investment, s = I/Y when multiplied by its productivity, 1/k, will give the rate by which national income or GNP will increase.

Obstacles and Constraints.

If (s) is raised in equation 7, we can increase $\Delta Y/Y$, the rate of GNP growth. For instance, if the national capital output ratio is 3:1 and the saving ratio is 6% of GNP, it means the rate of growth of the economy would be 2% per annum because:

$$\frac{\Delta Y}{Y} = \frac{s}{k} = \frac{6\%}{3} = 2\% \qquad \ldots\ldots\ldots\ldots(8)$$

If the national savings rate goes up to 15% through increased taxes, foreign aid etc, the GNP growth can be increased from 2% to 5%.

The main obstacle to development was the low level of new capital formation in most poor countries. But if a poor country wanted to grow at 7% per annum and does not have a savings rate of 21% (assuming k to be 3) and manages only 15%, it could fill the savings gap of 6% through foreign aid or private foreign investment.

LIMITATIONS OF THE HARROD-DOMAR MODEL IN UDCs.

1. **Different Conditions.** The models were not intended to guide industrialization programs of under developed countries.

2. **Savings Ratio.** The growth models require high savings as well as low capital output ratio. In the UDCs, savings and investment decisions are taken by a small percentage of people with the majority of people leading a subsistence life.

3. **Capital Output Ratio.** It is difficult to measure capital output ratio when productivity is hindered by shortages and bottlenecks. According to Prof. Hirschman, the predictive and operational value of a model based on the capital output ratio and the savings ratio is less useful in under developed countries.

4. **Structural Unemployment.** According to Prof. Kurihara, the model fails to solve the problem of structural unemployment in UDCs i.e. unemployment arising out of a faster growth of population than the accumulation of capital.

5. **Disguised Unemployment.** The models begin with the assumption of full employment level of income which is not found in UDCs. Disguised unemployment cannot be removed by these models.
6. **Government Intervention.** UDCs cannot develop without substantial government intervention in the form of public investment, planning and regulating the economy. However, the model is based on laissez-faire policy.

7. **Foreign Trade and Aid.** The models are based on the assumption of a closed economy. However, UDCs are open economies in which foreign trade and aid has a major role.

8. **Price Changes.** Prices are assumed to be constant. However, the development experience of UDCs indicates inflationary growth.

9. **Institutional Changes.** Institutional factors are assumed to be given. However, economic development is not possible without institutional changes in Underdeveloped countries.

CONCLUSION.

The Harrod-Domar model is based on assumptions not found in UDCs and hence they are not applicable. Prof. Hirschman suggests that UDCs must have their own independent growth models. According to Michael Todaro, higher savings and investment are the necessary conditions for economic growth but they are not the sufficient conditions. The UDCs do not have the structural, institutional and attitudinal conditions (e.g. well integrated commodity and money markets, highly developed transport facilities, a well trained and educated workforce, the motivation to succeed, an efficient government bureaucracy) to convert new capital into higher levels of output. Harrod-Domar models assume the existence of these conditions in UDCs.

THE LEWIS THEORY OF DEVELOPMENT (STRUCTUAL CHANGE MODEL)

Structural change theory focuses on the mechanism by which underdeveloped economies transform their economic structures from agricultural orientation into a modern industrial and service oriented economies. It employs the tolls of neoclassical price and resource allocation theory and modern econometrics to describe how this transformation takes place. One representative theory of structural change approach is the "two sector surplus labor" model of W Arthur Lewis.

Basic Model (Two Sector Economy).

The Lewis two sector model became the general theory of the development process in surplus-labor developing countries during the 60s and early 70s. In the Lewis model, the UDC consists of two sectors. The traditional, overpopulated rural subsistence sector has zero marginal labor productivity. The primary focus of the model is on the process of labor transfer and the growth of output and employment in the modern sector. Lewis assumed that urban wages would be about 30% higher than average rural wages to induce workers to migrate from their rural areas. The urban wages are assumed to be constant and hence at this wage rate, the supply of labor is perfectly elastic. The Lewis model can be diagrammatically represented as in Figure 2.1.
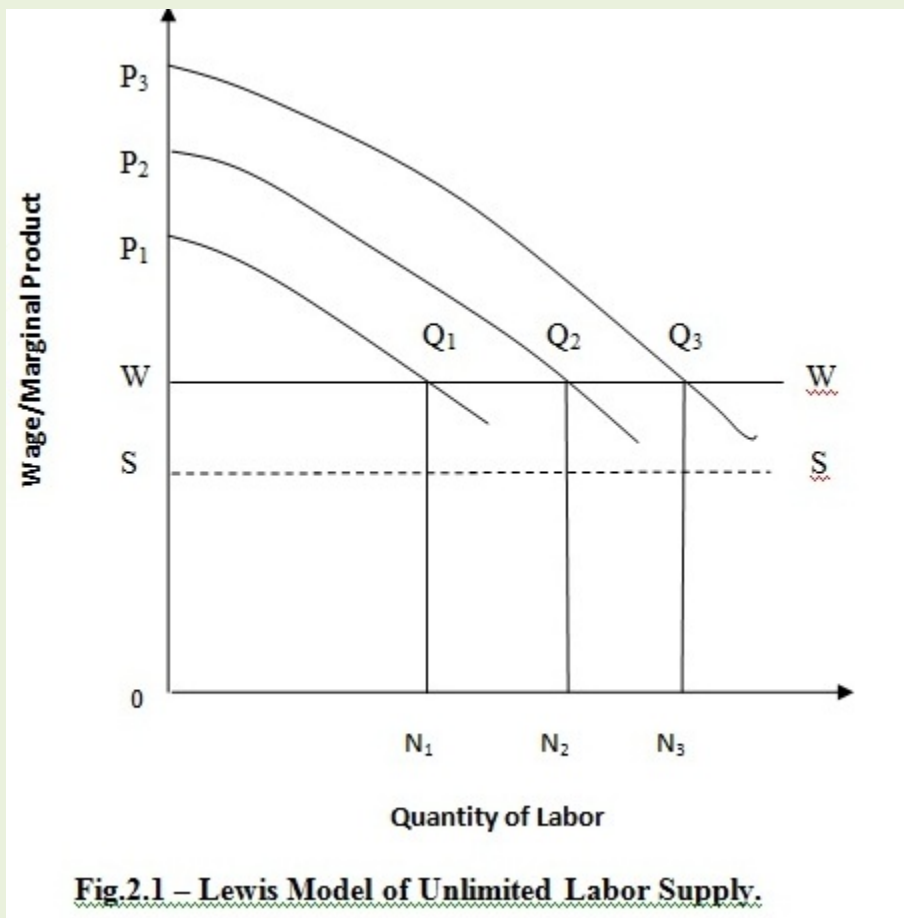
Fig.2.1 – Lewis Model of Unlimited Labor Supply.

Capitalist Surplus in the Urban Sector.

OS represents average subsistence wage in the subsistence sector and OW the capitalist wage in the urban sector. At OW wage rate in the urban sector, 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 urban sector, its marginal productivity curve is P_1L_1 and the total output of the sector is $OP_1Q_1N_1$. Out of these, workers are paid wages equal to the area OWQ_1N_1. The remaining area WP_1Q_1 is the surplus output. This is the capitalist surplus in the urban sector. When this surplus is reinvested, the marginal productivity curve shifts upwards to P_2L_2. The capitalist surplus and employment are now larger than before being WP_2Q_2 and ON_2 respectively. This process of reinvestment of surplus goes on till the entire surplus labor is absorbed in the urban sector. After this, the labor supply curve will assume a positive slope and wages and employment will continue to rise with development.

Capital is formed out of profits earned by the capitalists. If technical progress is capital saving, it will increase the productivity of capital and if it is labor saving, it will increase the productivity of labor. Technical progress will also generate surplus and increase investment and employment in the urban sector. The structural transformation of the economy will have taken place with the balance of economic activity shifting from traditional rural agriculture to modern urban industry.

Role of the State and Private Capitalists.

In an UDC, the wage and salary earners save only about 3 per cent of the national income. The dominant classes are engaged in conspicuous consumption. It is therefore the State capitalist and private capitalists who create capital out of profits earned. The private capitalist exploits the new opportunities, widens the market, develops and adopts new techniques that increases the productivity of labor and generates the surplus. The State capitalist can accumulate more capital by using the profits of the capitalist sector (through taxation) and also use surplus subsistence labor. If the opportunities for using capital productivity increase rapidly, the surplus will also grow rapidly along with the capitalist class.

Capital Formation through Bank Credit.

In an UDC with abundant idle resources and capital shortage, capital formation can also take place through bank credit. However, bank credit led capital formation can also lead to inflation. Inflation takes place because the supply of consumer goods remains constant and the money supply increases as a result of bank credit to the capitalist sector. But the problem of inflation is only temporary because when the capital goods begin to produce consumer goods, the demand supply gap of consumer goods is closed and the prices come back to the original level. As capital formation is taking place continuously, output, employment and profit rise continuously. Higher profits lead to higher savings and a time comes when savings increase so much that new investments can be financed without bank credit.

End of the Growth Process.

The process of growth comes to an end with the supply of labor becoming perfectly inelastic or when the wage rates begin to rise and profits begin to fall so that there is no surplus left for reinvestment.

Open Economy.

In an open economy, capitalist can export to capital to labor abundant countries when domestic supply of labor becomes perfectly inelastic or governments can encourage mass immigration of surplus labor at subsistence wages so that the growth process is continued. However, according to Lewis, mass immigration is not possible because trade unions will oppose it. Further, capital exports will reduce the cost of production of imported goods and as a result the real wages of workers will rise, thus bringing about a fall in capitalist profits. Therefore what is true of a closed economy is also true of an open economy and the growth process must come to an end.

Criticism of the Lewis Model.

The Lewis theory is relevant to overpopulated UDCs under certain conditions. Its applicability is limited by its assumptions. The following criticisms are made:

1. **Wage Rate is not constant in the Capitalist Sector.** The wage rate in the capitalist sector of an UDC continues to rise over time in the presence of open unemployment in the rural sector. Institutional factors such as trade union bargaining power, civil service wage structure and multinational firms' hiring practices tend to increase the general wage level in the urban sector. Thus, wage rates do not remain constant in the capitalist sector.

2. **Jobless Economic Growth.** If productive capital is labor saving, it would not absorb surplus labor and the distributive effects of reinvestment will be all in favor of the capitalist class with no increase in aggregate social welfare and hence the theory breaks down. The anti-developmental nature of economic growth is shown in Fig. 2.2.

   In Fig.2.2, the P_2L_2 curve has a greater negative slope than the P_1L_1 curve, indicating labor saving technique. When the marginal productivity curve shifts upwards from P_1L_1 to P_2L_2, the total output increases from $OP_1Q_1N_1$ to $OP_2Q_1N_1$ and the total wage bill remains constant at OWQ_1N_1 because the labor employed also remains constant. Thus when productive capital becomes labor saving, the Lewis model generates **Jobless Growth.**

3. **Supply of Skilled Labor is not a temporary problem.** Lewis assumes the existence of unskilled labor. He feels that skilled labor is a temporary problem which can be removed by providing training facilities. However, skill formation is a long drawn process and the supply of skilled labor force is a serious problem in under developed countries.

4. **Inflation is not Self-liquidating.** Lewis assumes that inflation resulting from bank credit led investment is self-liquidating. However, the fact is that the marginal propensity to consume is very high in poor countries and due to structural rigidities the supply of consumer goods falls short of demand leading to perennial inflation.

5. **Absence of Evidence of Surplus Labor in the Rural Sector.** Some economists like Shultz do not agree that the marginal productivity of labor in rural sector is zero. Further, it is difficult to find the exact number of surplus labor in the rural sector because all workers receive some wages either in kind or in cash. Even when the surplus labor is removed from the rural sector, farm output will fall leading to rise in rural wages and food prices.

Fig.2.2 – Lewis Model (Anti-developmental Dimension)
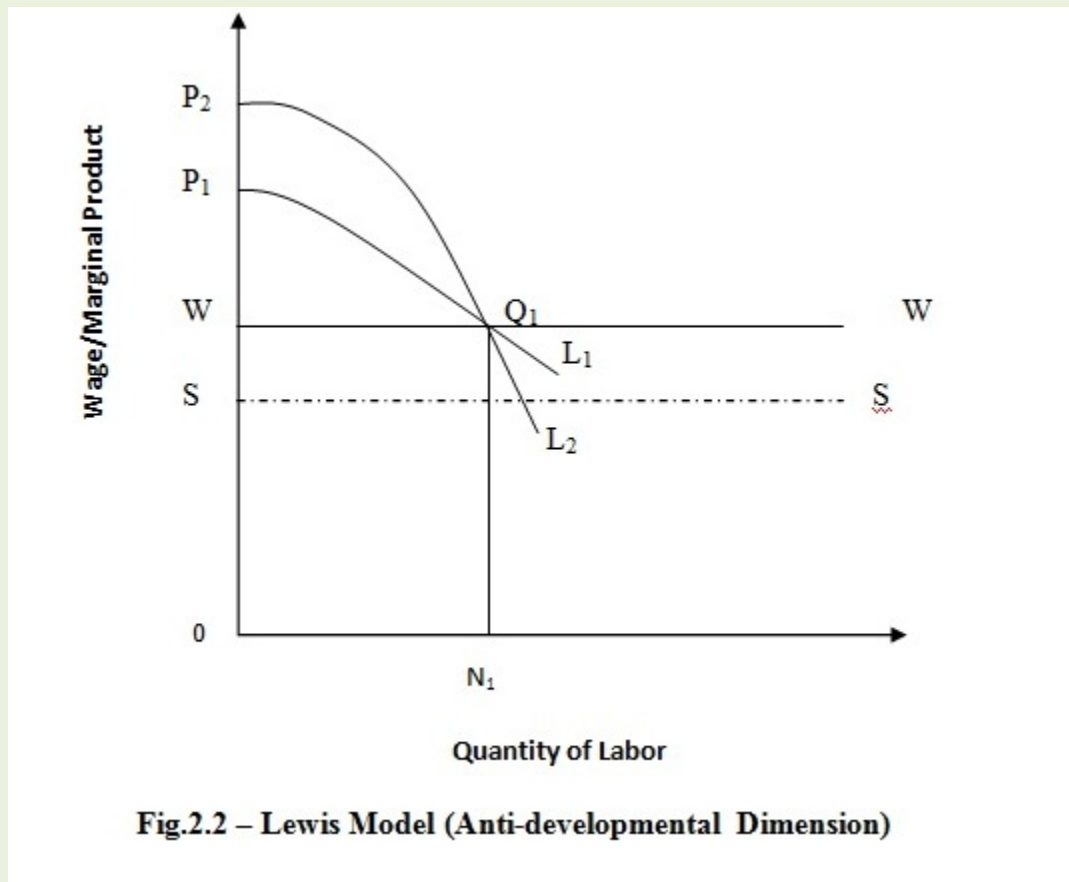
Conclusion.

Modern technology is labor saving. Capital scarce countries like India cannot prevent the flight of capital because capital has become a colorless commodity under the WTO. Surplus labor does not happen to exist in rural areas. Even if there is some surplus labor in rural areas, there is also the problem of surplus urban labor. Further, the urban wage rates are seen to be continuously rising. UDCs are therefore beset with structural rigidities and institutional backwardness. Under these circumstances, the Lewis model becomes impractical.

THE SOLOW NEO-CLASSICAL GROWTH MODEL.

The neo-classical model was an extension to the 1946 Harrod–Domar model that included a new term: productivity growth. Important contributions to the model came from the work done by Robert Solow. In 1956, Solow and T.W. Swan developed a relatively simple growth model which fit available data on US economic growth with some success. In 1987, Solow received the Nobel Prize in Economics for his work.

Extension to the Harrod–Domar model.

Solow extended the Harrod–Domar model by:

- Adding labor as a factor of production;
- Requiring diminishing returns to labor and capital separately, and constant returns to scale for both factors combined;
- Introducing a time-varying technology variable distinct from capital and labor.

The capital-output and capital-labor ratios are not fixed as they are in the Harrod–Domar model. These refinements allow increasing capital intensity to be distinguished from technological progress.

Graphical Presentation of the Model.

The model starts with a neoclassical production function $Y/L = F(K/L)$, rearranged to $y = f(k)$. From the production function; output per worker is a function of capital per worker. The production function assumes diminishing returns to capital in this model, as denoted by the slope of the production function curve $y = f(k)$. Other identities used in the model are as follows:

n = population growth rate

δ = depreciation

k = capital per worker

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y = output/income per worker

L = labor force

s = saving rate

Capital per worker change is determined by three variables:

1. Investment (saving) per worker.
2. Population growth, increasing population decreases the level of capital per worker.
3. Depreciation – capital stock declines as it depreciates.

When sy > (n + δ)k, in other words, when the savings rate is greater than the population growth rate plus the depreciation rate i.e. when the sy line is above the unity line on the graph, then capital (k) per worker is increasing. **The growth of the capital labor ratio is known as capital deepening.** When capital is increasing at a rate only enough to keep pace with population increase and depreciation, **it is known as capital widening i.e. when the new set of workers are provided with the existing amount of capital.**

The sy and (n + d)k curves intersect at point A, the "steady state". At the steady state, output and capital per worker is constant ($\Delta k + \Delta o = 0$). However total output is growing at the rate of n, the rate of population growth. **The optimal savings rate is called the golden rule savings rate and is derived below.**

Left of point A, point k_1 for example, the saving per worker is greater than the amount needed to maintain a steady level of capital, so capital per worker increases. There is capital deepening from y_1 to y_0, and thus output per worker increases. Right of point A where $sy < (n + δ)k$, point k_2 for example, capital per worker is falling, as investment is not enough to combat population growth and depreciation. Therefore output per worker falls from y_2 to y_0.
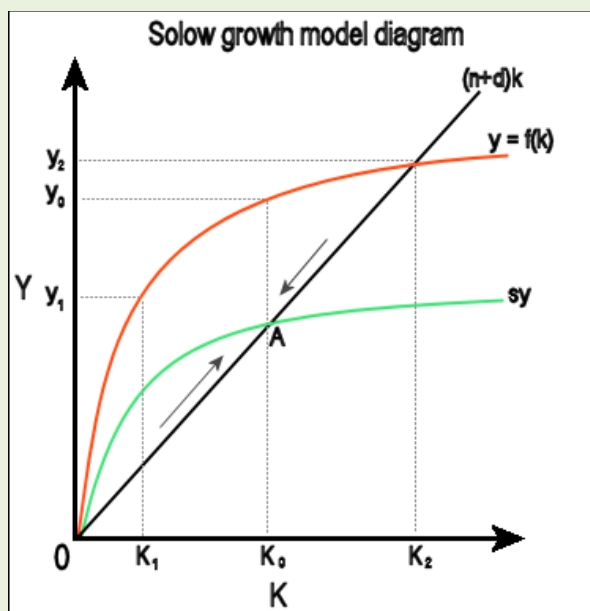
Fig.2.3 – The Solow Model.

Changes in the saving rate

This graph is very similar to the one drawn at Fig.2.3. However, it now has a second savings function s_1y. It demonstrates that an increase in the saving rate shifts the function up. Saving per worker is now greater than population growth plus depreciation, so capital accumulation increases, shifting the steady state from point A to B. As can be seen on the graph, output per worker correspondingly moves from y_0 to y_1. Initially the economy expands faster, but eventually goes back to the steady state rate of growth which equals n.

There is now permanently higher capital and productivity per worker, but economic growth is the same as before the savings increase. The economy will reach a higher equilibrium but the rate of growth of the economy will remain the same at the point of steady state. The rate of growth may expand between two steady state points but at various points of steady states, the rate of growth will remain the same.
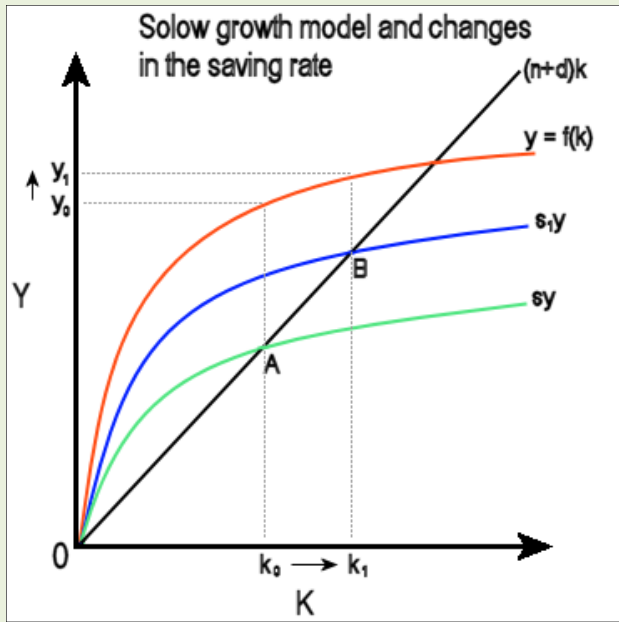
Fig.2.4 – Changes in the Saving Rate.
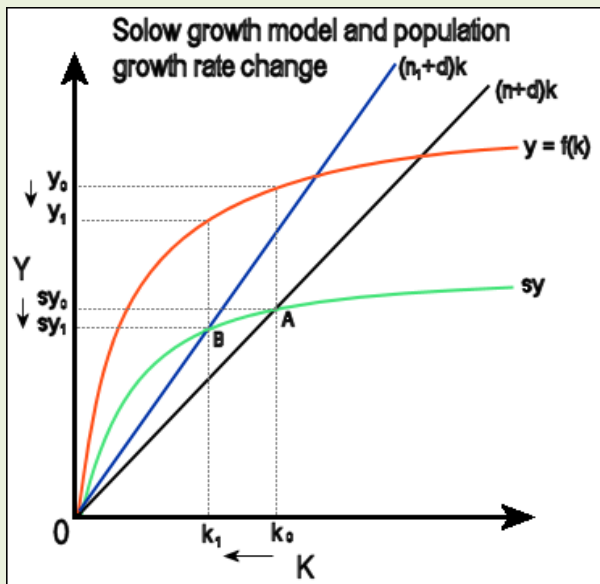
Changes in population.

Fig.2.5 – Changes in Population.

This graph is again very similar to the first one, however, the population growth rate has now increased from n to n_1, and this introduces a new capital widening line ($n_1 + \delta$). As a result of increase in population, the rate of growth of income falls from y_1 to y_0, the capital per worker falls from k_0 to k_1 and the point of steady state growth shifts to the left from point A to point B. Also notice that the saving per worker has also fallen from sy_0 to sy_1.

Empirical Evidence.

A key prediction of neoclassical growth models is that the income levels of poor countries will tend to catch up with or converge towards the income levels of rich countries as long as they have similar characteristics – for instance saving rates. Since the 1950s, the opposite empirical result has been observed on average. If the average growth rate of countries since, say, 1960 is plotted against initial GDP per capita (i.e. GDP per capita in 1960), one observes a positive relationship. In other words, the developed world appears to have grown at a faster rate than the developing world, the opposite of what is expected according to a prediction of convergence. However, a few formerly poor countries, notably Japan, do appear to have converged with rich countries, and in the case of Japan actually exceeded other countries' productivity, convergent growth rates are still expected, even after convergence has occurred; leading to over-optimistic investment, and actual recession.

The evidence is stronger for convergence within countries. For instance the per-capita income levels of the southern states of the United States have tended to converge to the levels in the Northern states. Whether convergence occurs or not depends on the characteristics of the country or region in question, such as:

- Institutional arrangements
- Free markets internally, and trade policy with other countries, and the
- Education policy.

If productivity were associated with high technology then the introduction of information technology should have led to noticeable productivity acceleration over the past twenty years; but it has not. Econometric analysis on Singapore and the other "East Asian Tigers" has produced the surprising result that although output per worker has been rising, almost none of their rapid growth had been due to rising per-capita productivity.

Criticisms of the Model.

According to the Solow model, technology and the capital labor ratio are the sole determinants of per capita income and thus of the standard of living. The capital labor ratio depends positively on the saving rate and negatively on the depreciation and population growth rates. The depreciation rate and the population growth rate have hardly witnessed any change over time and the differences in them across countries are hardly significant. It is hard to keep technology secrets for long and high speed communication networks have facilitated its adoption fairly uniformly. This leaves the relationship between the per capita income and the saving rate quite strong. Thus the validity of the Solow model hinges on the strength of this relationship across countries and over time.

Historical data around the world cast doubts on the strong positive relationship between per capita income and the saving rate. As per the 2002 data, the US with high per capita income (US $35,060) has a low saving rate of about 17 per cent as compared to Malaysia's medium per capita income (PPP USD 8280) and a high saving rate of 47%. India had low per capita income of (PPP US$ 2570) and a medium high saving rate of 26 per cent. Pakistan with a low per capita income (USD 1940 at PPP) had a low saving rate of only 15 %. Thus historical data neither supports nor rejects Solow's theory. It only shows that there must be some other determinants of the standard of living other than the saving investment rate.

Empirical evidence offers mixed support for the model. Limitations of the model include its failure to take account of entrepreneurship (which may be a catalyst behind economic growth) and strength of institutions (which facilitate economic growth). In addition, it does not explain how or why technological progress occurs. This failing has led to the development of endogenous growth theory, which endogenizes technological progress and/or knowledge accumulation.

Questions.

1. **Critically examine Rostow's stages of economic growth theory.**
2. **Critically examine the Harrod-Domar Model of Growth.**
3. **Explain the meaning of structural change in the economy. How does Lewis' two sector labor surplus model explain the structural change?**
4. **Explain Solow's model of economic growth. What happens to per capita income as a result of change in investment rate and increase in the rate of growth of population?**

CHAPTER 3

CONTEMPORARY MODELS OF DEVELOPMENT

AND UNDERDEVELOPMENT

PREVIEW.

- **Theories of endogenous growth with special reference to Romer's model.**
- **Underdevelopment as coordination failure.**
- **Multiple equilibria.**
- **The big push theory.**
- **Liebenstein Theory of Critical Minimum Efforts.**

ENDOGENOUS GROWTH THEORY (W.S.R.T. ROMER'S MODEL).

The traditional growth theories were not able to explain the sources of long term economic growth. In fact, traditional growth theories believed that economies cannot grow over a long period. According to neoclassical theory, the low capital labor ratios of developing countries promise high rates of return on investment. However, in the era of World Bank-IMF sponsored globalization, particularly in the context of LDCs, it has been found that most of the LDCs failed to attract new foreign investment or to stop the flight of domestic capital. The paradoxical behavior of developing-world capital flows (from poor to rich countries) led to the development of the concept of Endogenous Growth or the New Growth Theory.

The new growth theory provides a theoretical framework for analyzing sustained endogenous growth that is determined by the system governing the production process. The endogenous growth models hold GNP growth to be a natural consequence of long run equilibrium. They explain the growth rate differentials across the countries and growth in itself. They also explain the factors that determine the size of λ (the rate of growth of GDP) that is not explained and exogenously determined in the Solow neoclassical growth equation.

The endogenous growth theory differs from the neoclassical growth theories in the following ways:

1. Rejects diminishing marginal returns to capital investments and permits increasing returns to scale in aggregate production.

2. Focuses on the role of externalities in determining the rate of return on capital investments.

3. Assumes that public and private investments in human capital generate external economies and productivity gains that offset the natural tendency for diminishing returns.

4. Seeks to explain the existence of increasing returns to scale and the divergent long term growth patterns among countries.

5. Technology is not considered necessary to explain long run growth.

The new growth theories can be expressed by the equation $Y = AK$ (Harrod-Domar Model). Here, 'A' represents any factor that affects technology and K includes both physical and human capital. But there are no diminishing returns in this equation of growth which means investments in physical and human capital can generate external economies and productivity gains that exceed private gains so as to obtain increasing returns and sustained long term growth. The new growth theory therefore emphasizes the role of savings and investment in human capital investment for achieving rapid economic growth. The new growth theory therefore also differs from the traditional theories in many other ways. Firstly, there is no convergence of growth rates amongst closed economies. National growth rates remain constant and differ across countries depending on national savings rates and technology levels. Secondly, there is no tendency for per capita income levels in capital-poor countries to catch up with those in rich countries with similar savings and population growth rates. As a result, a temporary or prolonged recession in one country can lead to a permanent increase in the income gap between itself and rich countries.

The endogenous growth models explain paradoxical capital flows across countries leading to greater wealth inequalities between developed and developing countries. The prospect of high returns on investment offered by developing countries with low capital labor ratios is negated by lower levels of complementary investments in human capital, infrastructure or research and development. There is less benefit to poor countries from alternative forms of capital expenditure because the free market leads to the accumulation of less than the optimal level of complementary capital.

Where complementary investments produce social and private benefits, governments may improve the efficiency of resource allocation by providing public goods or by encouraging private investment in knowledge intensive industries where human capital can be accumulated and increasing returns to scale generated. Further, the new growth theory explains technological change as an endogenous outcome of public and private investment in human capital and knowledge-intensive industries. They therefore suggest an active role for public policy in promoting economic development through direct and indirect investments in human capital formation and the encouragement of foreign private investment in knowledge intensive industries such as computer software and telecommunications.

UNDERDEVELOPMENT AS A CO-ORDINATION FAILURE.

A co-ordination failure is a situation in which agents' inability to co-ordinate their behavior (choices) leads to an outcome (equilibrium) that leaves all agents worse off than in an alternative situation that is also equilibrium. This may occur even when all agents are fully informed about the preferred alternative equilibrium because of difficulties of co-ordination, because people hold different expectations, because everyone is better off waiting for someone else to make the first move.

When complementarities are present, an action taken by one firm, worker, organization or government increases the incentives for other agents to take similar actions. These complementarities often involve investments whose return depends on other investments being made by other agents.

Examples of Co-ordination Failure.

1. **Firms need for labor with Specialized Skills.**

An important example of a complementarity is the presence of firms using specialized skills and the availability of workers that have acquired those skills. **Firms will not enter a market or locate in an area if workers do not possess the skill the firms need but workers will not acquire the skills if there are no firms to employ them. This co-ordination problem can leave an economy stuck in a bad equilibrium that is a low average income or growth rate or with a class of citizens trapped in extreme poverty.** Even though all agents would be better off if workers acquired skills and firms invested, it may not be possible to get to this better equilibrium without the aid of government. Such co-ordination problems are also common in initial industrialization as well as in upgrading skills and technologies and may extend to issues as broad as changing behavior to modern ways of doing things. **Such problems are further compounded by other market failures, particularly those affecting capital markets.**

2. **Commercialization of Agriculture in a developing Rural Area.**

Specialization is an important feature of an advanced economy and it leads to large scale production. But specialization is possible only if large numbers of goods are traded. Goods will have to reach markets and consumers will have to be convinced of their quality. In agricultural markets, the role of the middlemen is crucial in vouching for the quality of the products they sell. In order to develop a specialized agricultural market, there is a need for a sufficient number of concentrated producers with whom the middleman can work effectively. In the absence of middlemen, the farmers will continue subsistence farming. The result will therefore be an under-development trap in which a region remains stuck in subsistence agriculture.

3. Complementarities and the 'Chicken and Egg' Problem.

Whether the required skills should be developed first or the demand for skills should generate first? Complementary investments should be made at the same time through co-ordination. If there is a lag between investment and returns, investors will tend to wait for others to make investment and ultimately no investment will take place. In such cases, the role of the Government assumes importance in coordinating joint investments in areas where the workers who want skills that employers can use and the employers who want equipment that workers can use.

A new firm using new technologies may provide benefits to other firms that the adopting firm cannot capture. Each firm therefore has an incentive to under-invest in the new technology unless a sufficient number of others invest. Some of these benefits may include raising demand for key industrial products such as steel or helping to pay for the fixed costs of an essential infrastructure such as railroads or container ports or learning from others' experiences. Positive and deep government intervention can move an economy to a preferred equilibrium or to a higher permanent rate of growth in which there is no incentive to go back to the behavior associated with the bad equilibrium. In such cases, the government need not continue interventions because the better equilibrium will be self-sustaining and the government can concentrate on other problems such as public health and education. In the process of economic development, joint externalities are common. Underdevelopment begets underdevelopment and sustainable development tends to stimulate further development.

4. The Problem of Co-ordination – 'Where to meet Problem?'

A group of friends know that they will all be in Mumbai on a certain day but have neglected to settle on a specific location within the city. Now they are out of communication and can arrive at a common meeting point only by chance or by very clever guessing. They want to meet and consider themselves better off if they can do so. There is no incentive to cheat. There are many famous places in Mumbai like the Gateway of India, the Taj Hotel, Hanging Gardens, Juhu Beach. One of the friends arriving at the Gateway, finding nobody else may move on to try at Hanging Gardens. Similarly, another friend arriving at the Hanging Gardens, finding nobody else may move on to try at the Taj Hotel. Finally, the friends are not able to meet at a single place. The same thing happens when farmers in a region do not know what to specialize in. There may be good products from which to choose but the critical problem is for all the farmers to choose one so that middlemen may profitably bring the village produce to market. However, electronic mail (e-mail) may improve the prospects for communication and development in the modern times.

CO-ORDINATION FAILURE AND MULTIPLE EQUILIBRIA.

Multiple equilibria with possible coordination failure are shown in Fig.3.1. The 'S' shape function shows that the benefits an agent receives from taking an action depend positively on how many other agents are expected to take the action or on the extent of those actions. For instance, the price a farmer can hope to receive for his produce depends on the number of middlemen who are active in the region which in turn depends on the number of other farmers who specialize in the same product.

Another example would be that of a person who wants to sign up for Face Book. This person's decision to sign up will depend on how many of his friends are signing up (or that he expect will sign up). Here, the X-axis would show the number of friends expected to sign up and the Y-axis would show how many will sign up as a function of the number expected to sign up. If all of his friends would like to be on FB with him but none of them thinks the others will be interested or sign up, then no one may get it started. In reality, some people might sign up even if they think none of their friends will sign because they hope to meet some new friends on-line. This gives a positive intercept at Y_1. After Y_1, the function has a positive slope because the more friends expected to sign up, the more there will be who want to sign up. In this co-ordination is not a problem. One person can sign up for one of the social networking sites (FB, Orkut, Twitter, Linked-in etc) and then suggest that everyone else do the same. Co-ordination is not a problem when the group to be coordinated is small because the parties know each other and share common interests and they can communicate with each other at low cost. However, when the problem is complex as achieving successful economic development, the solutions to coordination problems are more difficult.

In the multiple equilibrium diagram, equilibrium is found where the 'privately rational decision function' (the S' shaped curve) crosses the 45 degree line. This is because, in these cases, agents observe what they expected to observe. When some people actually sign up, it would be reasonable to expect that more will sign up in future. Thus when people expect that a larger number will sign up, more people would like to join. This process of adjustment of expectations would continue until the number observed to sign up would just equal the number expected to sign up. The equilibrium in such cases is one of a situation in which everyone is doing what is best for them given what they expect others to do which in turn matches what others are actually doing. This happens when the S' function crosses the 45 degree line. At these points the values on the X-axis and Y-axis are equal i.e. the number expected to take an action is equal to the number that actually take that action.

In the figure, the 'S' function crosses the 45-degree line three times. Any of these three points could be equilibrium (multiple equilibria). Of the three, D_1 and D_3 are 'stable' equilibria because if expectations were slightly changed to a little above or below these levels, people would adjust their behavior and sign up or get off the system to come back to the original equilibrium level.

Note that in each of these two stable equilibria, the S-shaped curve cuts the 45-degree line from above which is the condition of stable equilibrium.

The middle equilibrium at D_2 cuts the function from below and so it is unstable. This is because, if a few less were expected to join, the equilibrium would be D_1 and if a few more, the equilibrium would move to D_3. Therefore D_2 could be equilibrium only by chance. Thus in practice, we think of an unstable equilibrium such as D_2 as a way of dividing ranges of expectations over which a higher or lower stable equilibrium will hold.

The 'S' function first increases at an increasing rate, then at a decreasing rate as in the figure. This shape reflects the typical nature of complementarities. Some agents may take the complementary action (such as joining or investing) even if others in the economy do no, particularly when interactions are expected to be with foreigners such as through exporting or messaging with people in other countries. If a few agents take the action, spillovers will be minimal. Thus the curve does not rise quickly at first as more agents take the action. But after enough join or invest, there is a snowballing effect in which most agents begin to provide spillover benefits to other agents and the curve increases at a much faster rate. Finally, after most potential investors have been positively affected and the most important gains have been enjoyed, the curve starts to increase at a decreasing rate.

The problem of coordinating investment decisions when the rate of return of one investment depends on the presence or extent of other investments can be given as an example of multiple equilibria. All are better off with more investors or higher rates of investment but the market may not get us there without the influence of certain types of government policy or when the government policy is wrong. The difficulties of investment coordination give rise to various government led strategies for industrialization.

Assuming the X-axis representing the average rate of investment expected of other key firms or in the economy as a whole and the Y-axis as the profitable rate of investment for a particular firm given when the other firms are expected to invest on average, the points where the S' function cuts the 45-degree line shows equilibrium investment rates. In this case, the economy may get stuck in a low growth rate because it expects to be in a low investment rate. Changing expectations may not be sufficient if it is more profitable for a firm to wait for others to invest rather than to be a pioneer investor. Here, government policy is needed in addition to a change in expectations. Hence, the attention to the potential presence of multiple equilibria is important. Market forces scan bring us to one of the equilibria but they are not sufficient to ensure that the best equilibrium will be achieved and they offer no mechanism to become unstuck from a bad equilibrium and move toward a better one.

When jointly profitable investments are made with coordination, multiple equilibria may exist in which the same individuals with access to the same resources and technologies could find themselves in either a good or a bad situation. According to development economists, it is probable that many of the LDCs including many in sub-Saharan Africa are caught in such circumstances economy wide. Political pressures from potential losers in the modernization process can also prevent shifts to better equilibria. Modern technology may not be available in the country. Technology transfer may be a problem area. Yet another problem illustrated by the Figure is that of the amount of effort each firm in a developing region expends to increase the rate of technology transfer depends on the effort undertaken by other firms. Bringing in modern technology from abroad often has spillover effects for other firms. The presence of multiple equlibria shows that making better technology available is a necessary but not a sufficient condition to achieve development goals.

Fig.3.1 – Multiple Equilibria.
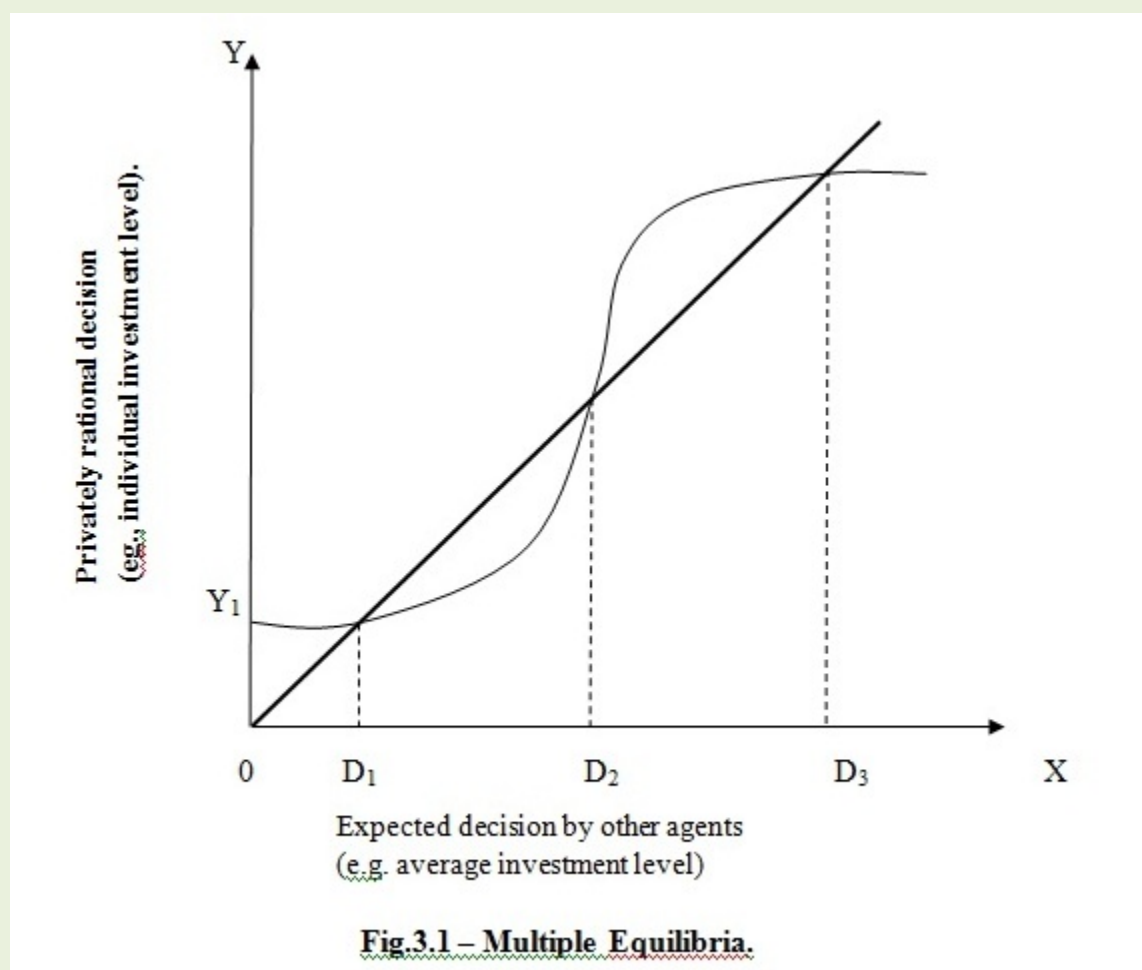
THE BIG PUSH THEORY.

Introduction.

According to the theory of Big Push, underdeveloped countries require large amounts of investment to come out of backwardness and begin economic development. Paul N Rosenstein Rodan who developed the theory of Big Push says, "There is a minimum level of resources that must be devoted to…a development program if it is to have any chance of success. Launching a country into self-sustaining growth is a little like getting an airplane off the ground. There is a critical ground speed which must be passed before the craft can become airborne…"[1]. Economic development needs the external economies that arise from the simultaneous establishment of technically interdependent industries. Indivisibilities and external economies flowing from a minimum quantum of investment are essential for launching economic development successfully.

The Role of the State.

Rodan has clearly assigned an important role for the State in the establishment of SOC. Since private capital is profit motivated and investment-shy as far as SOC is concerned, it becomes the primary responsibility of the State to make provision for creating Social Overhead Capital.

The Three Indivisibilities.

Paul Rodan distinguishes between three different kinds of indivisibilities and external economies. These indivisibilities are: (1) Indivisibilities in the production function, particularly the indivisibility of the supply of social overhead capital (SOC), (2) Indivisibility of demand, and (3) Indivisibility in the supply of savings.

Indivisibilities in the Production Function.

Indivisibilities of inputs, outputs or processes lead to increasing returns. Rodan considers SOC as the main source of indivisibilities and external economies on the supply side. The services of SOC consisting of basic industries like power, transport and communications are indirectly productive and have a long gestation period. They cannot be imported. Their installation requires a sizeable initial lump of investment and hence excess capacity remain in them for quite some time. They also possess an irreducible minimum industry mix of different public utilities so than an UDC will have to invest between 30 to 40 per cent of its total investment in these channels. These indivisibilities of supply of SOC are the principal obstacles to development in UDCs. Therefore a high initial investment in SOC is necessary in order to promote directly productive investments.

Indivisibilities of Demand.

The indivisibility or complementarity of demand requires simultaneous setting up of interdependent industries in UDCs because individual investment projects have high risks as low incomes limit the demand for their products. Rodan gives the example of a closed economy where a hundred disguised unemployed workers employed in a shoe factory whose wages constitute additional income. If these workers spend all their income on shoes they manufacture, the shoe market will have a regular demand and thus succeed. But the reality is that human wants are diverse and not all the income received will be spent on shoes and those who are not in the factory will not buy additional shoes because they are poor. The new shoe factory will have to be closed down for want of adequate demand. However, if hundred new factories are set up and ten thousand disguisedly unemployed workers are employed in these factories to produce a variety of consumer goods and these workers spend their income on buying these goods, then the new hundred producers will be customers of each others' goods. The complementarity of demand reduces the risk of finding a market and increases the incentive to invest. In other words, it is the indivisibility of demand which requires a high minimum investment in inter-dependent industries to enlarge the size of the market. Rodan's example of the Shoe Factory is illustrated in Fig.3.2.

The Average Total Cost and Marginal Cost curves represent the costs of a less than optimum size plant. D_1 and MR_1 are the demand land marginal revenue cures of the shoe factory when investment is made only in it. It produces OQ_1 shoes and sells at OP_1 price which does not cover the ATC and hence the factory is making losses equal to the area P_1abc. When simultaneous investment is made in a number of different industries, the market for shoes expands. The demand for shoes rises to D_2 and now OQ_2 quantity of shoes are sold and the shoe factory earns profits equal to P_2RST. The other industries in the economy will also earn similar profits.

Fig.3.2 – Indivisibility of Demand.
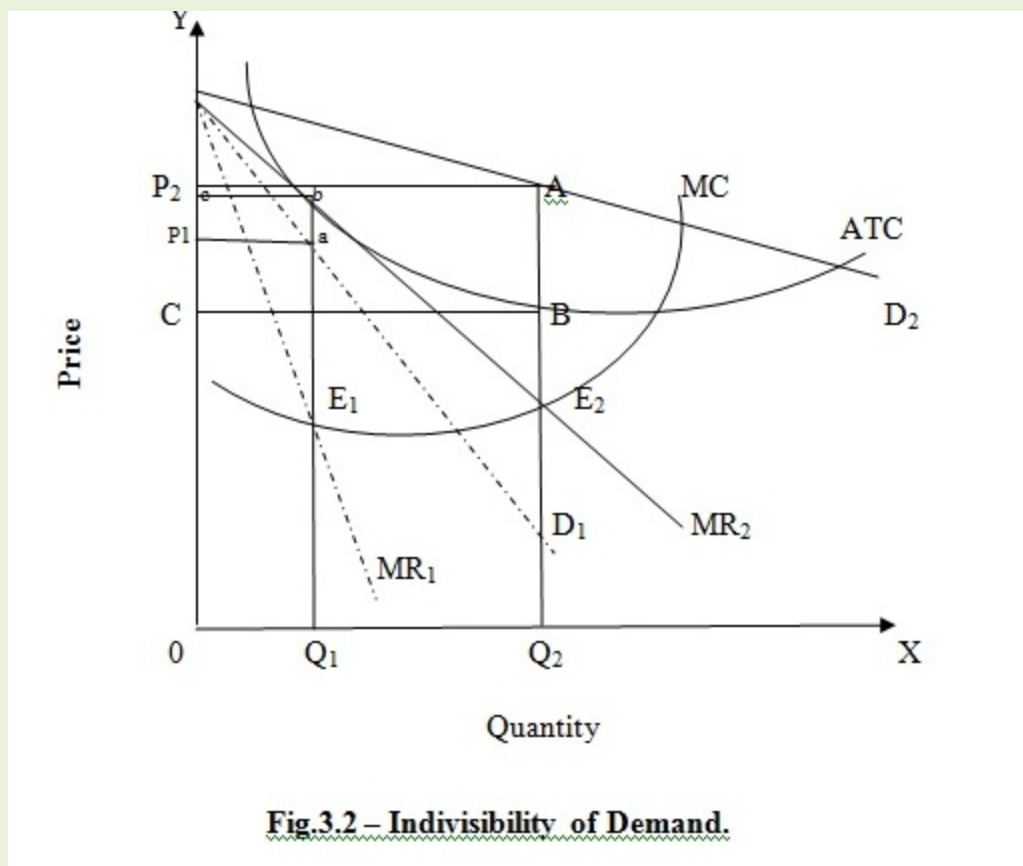
Indivisibility in the Supply of Savings.

A high income elasticity of saving is the third indivisibility. A high minimum investment requires a high level of savings which is not easy in UDCs. In order to overcome the problem of low saving, the marginal rate of savings should be higher than the average rate of savings.

CONCLUSLION.

Given these three indivisibilities and the external economies, a big push or a minimum investment is required to overcome the obstacles to development in UDCs.

Critical Appraisal of the Big Push Theory.

Rodan's theory is based on indivisibilities and non-proportionalities in the production function. The theory examines the path towards equilibrium and not just the conditions at a point of equilibrium. It is therefore a theory of investment concerned with imperfect markets in UDCs. It is a high minimum investment and not price mechanism that takes UDCs to a higher optimum equilibrium. The theory, however, has the following limitations:

1. **Negligible Economies from Investment in Export and Import Substitutes.**

According to Viner, UDCs realize greater economies from world trade independently of home investment. Rodan having recognized this fact has however overlooked the fact that a substantial investment by UDCs is made for export and marginal import substitutes where external economies are negligible.

2. **Negligible Economies from Cost-reducing Investments.**

There are limited external economies in the production of local consumer goods and most public utilities. Investment in the case of goods and services having relatively inelastic demand are cost-reducing but not output expanding. Since external economies are derived from output-expansion in the initial industry, they are negligible in the case of cost-reducing investment.

3. **Neglects Investment in the Agricultural Sector.**

The theory emphasizes big push in the industrial sector (capital goods, consumer goods and SOC) and ignores the primary sector. In primary sector dominated UDCs, a big push is required to be made in irrigation, transportation, land reforms and in improving agricultural practices. The neglect of the primary sector will not help accelerate the process of economic development in UDCs.

4. **Big Push will generate Inflationary Pressure.**

Investment in SOC is not only lumpy but also heavy with a high capital output ratio and long gestation period. The period in which SOC is formed, inflationary pressures will be high due to the shortage of consumer goods. Inflationary pressures will prolong the creation of SOC, thereby prolonging the process of rapid economic development.

5. **Low Investment leads to Large Increase in Output.**

Prof. John Adler's statistical analysis of the economic development of the world shows that a relatively low level of investment pays-off well in the form of additional output. This conclusion is based on his study of low capital output ratios in India, Pakistan and in many other Asian and Latin American countries. There is no conclusive proof that a big push of investment is a prerequisite for the economic development of UDCs.

6. **Administrative and Institutional Problems.**

The big push theory is based on public sector investment. However, the administrative and institutional machinery in UDCs is weak and inefficient. Lack of statistical information, technical know-how, trained personnel and coordination between the various departments are some of the important problems which do not have easy solutions. Further, most of the UDCs have a mixed economy where the private and public sectors are mostly competitive and not complementary. This may lead to mal-allocation of scarce resources.

7. **|Absence of Empirical Evidence.**

Rodan's theory is a prescription and not an empirical fact. According to Prof. Hagen, historically, the presence or absence of a big push has not been a distinguishing feature of growth anywhere.

LEIBENSTEIN'S CRITICAL MINIMUM EFFORT THEORY.

Introduction.

Harvey Leibenstein developed the theory that underdeveloped countries have the problem of vicious circle of poverty which keeps them in a low equilibrium trap. In order to come out of the trap, a critical minimum effort is needed to raise the per capita income to a level at which sustained development could be maintained. According to Leibenstein, every economy is subject to 'shocks' and 'stimulants'. While a shock reduces the per capita income, a stimulant actually increases the per capita income. Some countries are underdeveloped because the magnitude of the shock is greater than the magnitude of stimulant. It is only when the income raising factors are stimulated much beyond the income-reducing factors that the critical minimum is reached and the economy would be on the path to development.

Growth Agents.

The expansion of growth agents increases the stimulating factors.   The growth agents are the entrepreneur, the investor, the saver and the innovator. The growth contributing activities result in the creation of entrepreneurship, the increase in the stock of knowledge, the expansion of productive skills and the increase in the rate of saving and investment.

Incentives.

The expansion of growth agents will depend upon the anticipated outcome of such activities, the actual result and on the incentives for further expansion or contraction generated by the interaction of the anticipation, the activities and the results. There are two types of incentives:

1. The zero-sum incentives which do not raise national income but have only a distributive effort, and
2. The positive-sum incentives that lead to the expansion of national income.

Positive-sum activities lead to the expansion of national income and economic development. However, the entrepreneurs in UDCs are engaged in zero-sum activities. They are the non-trading activities for securing a greater monopolistic control, political power and social prestige. The trading activities which lead to a greater monopolistic position but do not add to aggregate resources, the speculative activities which do not utilize savings but do waste scarce entrepreneurial resources and such activities that do use up net savings but the investments involved are in enterprises of such nature that their social value is either zero or their social value is lower than their private value. Thus the zero-sum activities are not real income creating activities but simple transfers of liquidity from some holders to others. The positive-sum activities which are essential for economic development have a limited scope in UDCs. Even if some entrepreneurs take up real investment projects in anticipation of profits, their positive-sum activities will degenerate and be directed towards zero-sum activities in the absence of net growth in the economy. It is therefore necessary that the minimum effort should be sufficiently large to create an environment favorable to the continuation and growth of positive sum activities.

Income Reducing Factors in UDCs.

In UDCs, the factors which remain rigid tend to reduce per capita income. These factors are:

1. The zero-sum entrepreneurial activities directed towards the maintenance of existing economic privileges through the inhibition and curtailment of potentially expanding economic opportunities.

2. The conservative activities of both organized and unorganized labor directed against change.

3. The resistance to new knowledge and ideas and the simultaneous s attraction of classical knowledge and old ideas.

4. Increase in essentially non-productive conspicuous public or private consumption expenditures that use resources that could otherwise be used for capital accumulation.

5. Population growth and the consequent labor force growth the dilutes the amount of capital available per worker, and
6. A high capital output ratio.

These negative influences can be destroyed by making a sufficiently large critical minimum effort which would increase the per capita income, the level of saving and investment and which in turn would lead to the following positive sum activities:

1. An expansion of the growth agents.

2. An increase in their contribution to per unit of capital as the capital-output ratio declines.

3. A decrease in the effectiveness of factors inhibiting growth.

4. The creation of social and environmental conditions that promote social and economic mobility.

5. Increased specialization and the expansion of secondary and tertiary sectors, and

6. The development of an atmosphere that leads to changes that are more conducive to economic and social changes particularly decline in fertility and decline in the rate of growth of population.

Graphical Explanation.

Leibenstein's critical minimum effort theory is explained in Figure 3.3 where the 45-degree line measures induced increases and decreases in per capita income. The curve '**gg**' represents all the per capita income raising forces and curve **'dd'** measures the per capita income reducing factors. If the stimulants raise per capita income from the equilibrium level **Oe** to **Om**, the income raising forces, thus, generated will raise the per capita income level by **na**. But at this level, the income reducing forces **fb** are greater than the income raising forces af which will therefore generate the downward path **abcd** until it reaches the equilibrium position **E**. It is only when the investment program raises the per capita income to **Ok** level that the path of sustained growth starts. Thus if the per capita income level in a period is raised to **Ok**, the income raising forces generated will rise the income level to **sG** which will generate the path of endless expansion of PCI as shown by the arrows rising above G. Raising the PCI to **Ok** level and beyond point **G** is the critical minimum effort. Leibensteain regards the critical minimum effort as a 'a minimum minimorum of all possible efforts that would lead to sustained real income growth' involving an optimum time pattern of expenditure or effort.
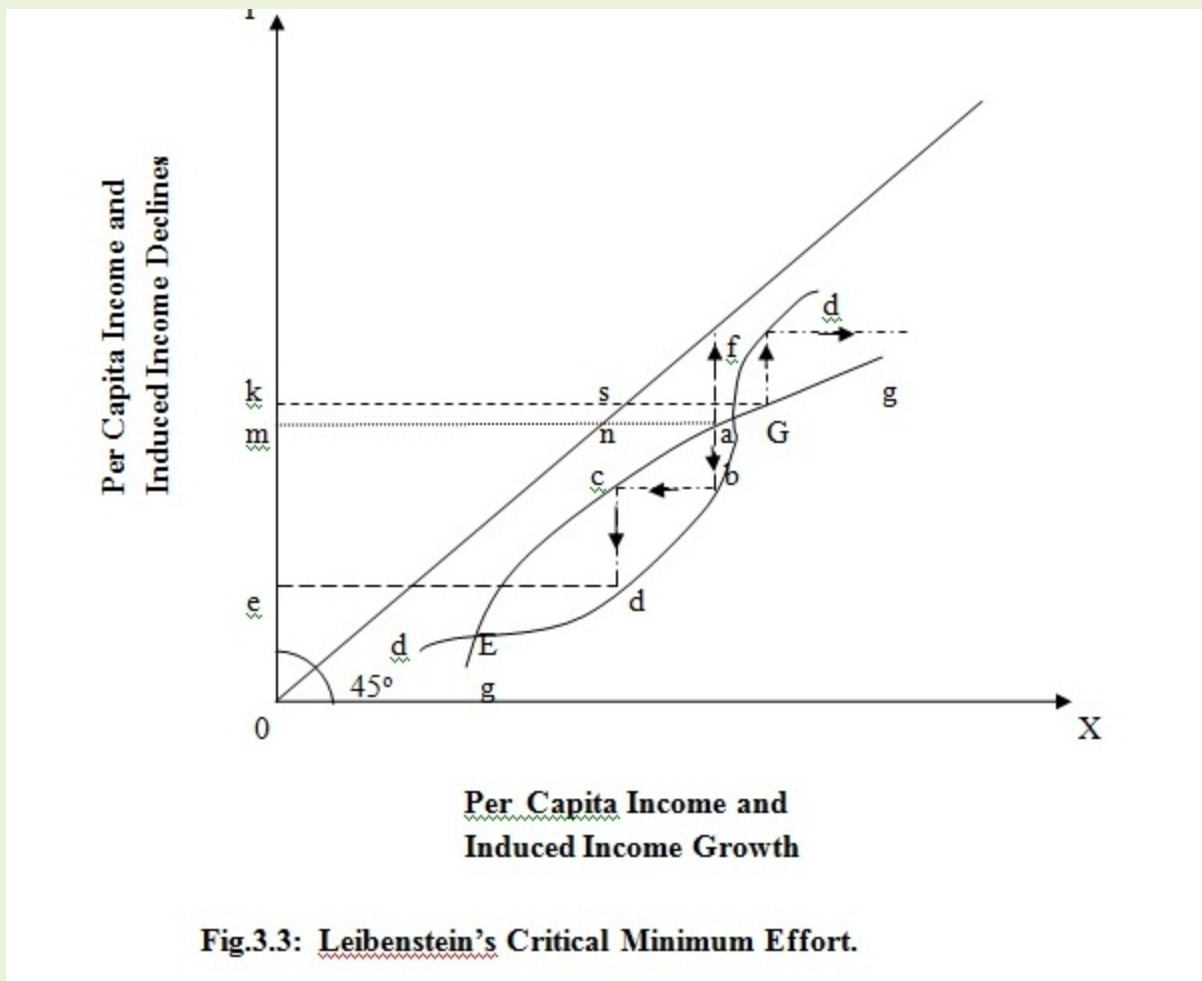
Fig.3.3: Leibenstein's Critical Minimum Effort.

Requirements of Sustained Development.

For sustained development, the initial investment effort should be more than a minimum to generate a large increase in per capita income to overcome autonomous or induced income reducing factors. The critical minimum effort may be divided into a series of smaller efforts and optimally timed in order to make the effort more effective. This is shown in Figure 3.4., where the line ee represents the low per capita income level and mm the critical minimum per capita income level. The gap between the two is divided into Area I and Area II. The Area III above mm is of self-sustained growth. If Oa is the per capita income to begin with, the initial injection of investment would raise per capita income to Ob level. Then at time t the second injection of investment would raise per capita income by cd so that the critical minimum level mm is reached. If investment is not optimally timed, the per capita income would follow the cy path of the curve bcy toward the low equilibrium level ee.
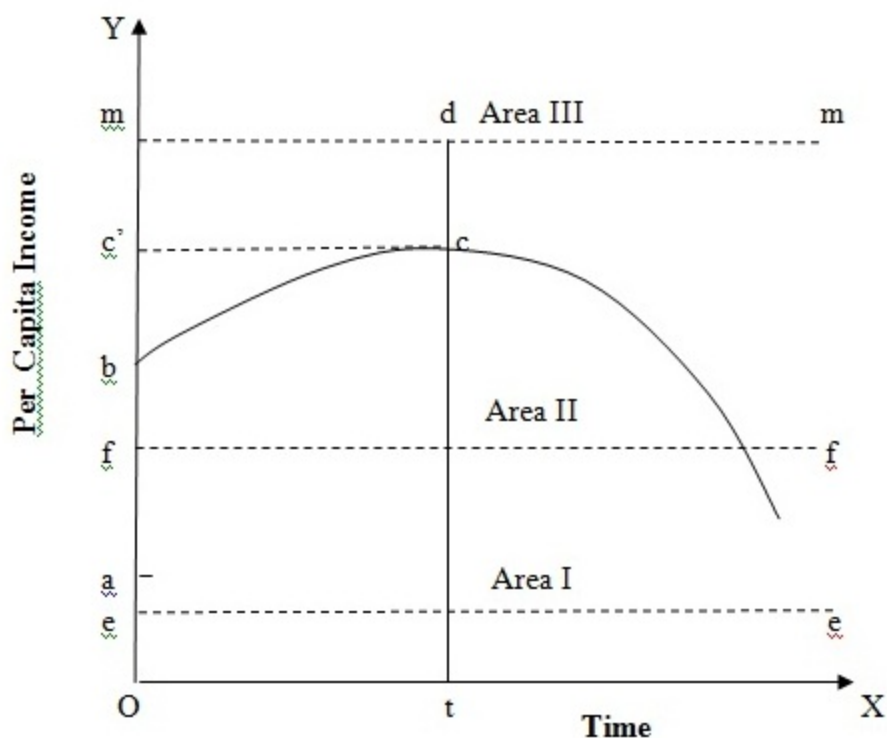
Fig.3.4 – Requirements of Sustained Development.

Population Growth a function of PCI.

The rate of population growth is a function of the level of PCI. It is closely related to the different stages of economic development. At the subsistence equilibrium level of income, fertility and mortality rates are the maximum and consistent with the survival rate of population. If the PCI is raised above the subsistence level, the mortality rate falls without any drop in the fertility rate and the population growth rate increases. However, after a point, further increases in PCI lower the fertility rate and as development gains momentum, the rate of population growth declines. According to Leibenstein, the biologically determined maximum growth rate of population is between 3 to 4 per cent. In order to prevent this high growth rate, the necessary critical minimum effort should be large. This is shown in Fig. 3.5.

The curve N measures the PCI. The curve P shows the rate of population growth at each level of PCI. Point **'a'** represents the subsistence equilibrium point where there is absence of population and income growth. If the PCI is raised to **yb**, the population growth rate is one per cent and the income growth rate is than one per cent. At the **yc** level of PCI, the population growth rate is higher than the rate of national income growth i.e., **ycg > ycc**. Therefore, the PCI

should be raised to a level so that the rate of growth of national income is above the rate of growth of population. This is only possible after **ye** level of PCI when the population growth rate starts declining. Point e is the 3 per cent maximum biologically determined growth rate of population assumed by Leibenstein. **Ye** is the critical minimum PCI level that is required to generate the process of sustained economic development.

Fig.3.5 – Population Growth a function of PCI.
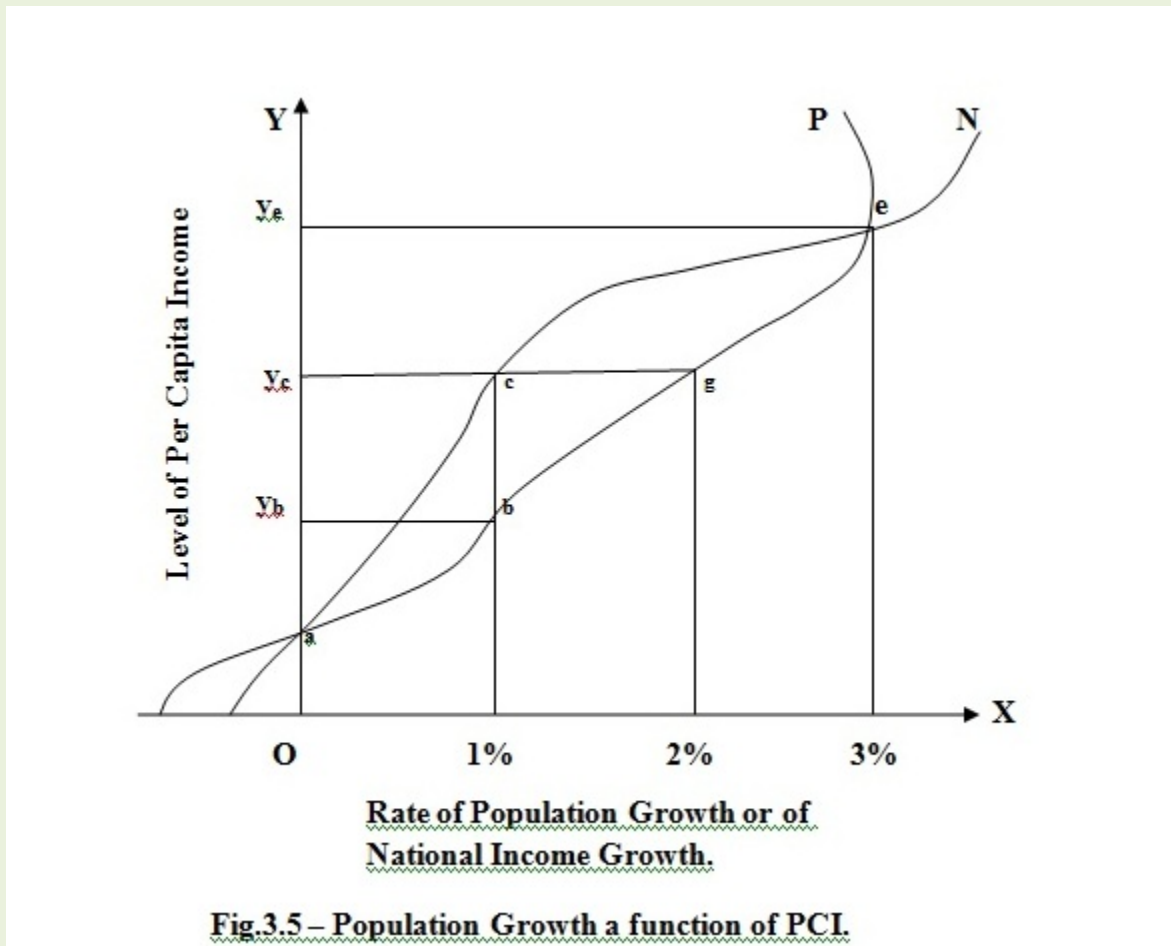
Leibenstein's Projections.

Leibenstein has estimated the size of the critical minimum effort in the case of an UDC with a starting population of one million. His calculations of fertility and mortality rates are based on life expectancy and confirm with those of UDCs. Projection 4b applies to those UDCs which hope to check the growth rate of population as the development process gains momentum. With the annual growth rate of population at 2.03 per cent, the capital output ratio 3:1, the required rate of investment is 13.2 per cent for the first five year period. In the 25th to 30th years, the population growth rate is maximum and is 2.42 per cent which requires an investment of 14.5 per cent. Then the population starts declining and in the 50th to 55th years, it is 1.49, thus requiring

an investment of 13.08 per cent. The required annual rates of national income growth during these periods are 4.40, 4.84 and 4.36 respectively.

A Critical Appraisal.

Leibenstein's theory is more realistic than Rodan's Big Push theory because giving a big push at once is impracticable in UDCs whereas the critical minimum effort can be properly timed and broken up into a series of smaller efforts to put the economy on the path of sustained development. This theory is also workable with democratic planning which is the case with most of the UDCs. However, the theory has following limitations:

1. **Changes in Population Growth Rate is related to Death Rate and Birth Rate.**

The theory is based on the assumption that the rate of growth of population is an increasing function of the level of PCI up to a point but beyond that it is a decreasing function of the latter. However, the growth rate of population is due to the decline of death rate and not due to rise in PCI. The death rate falls because of availability of health facilities and developments in medical science. Further, the fall in the birth rates after a point is not due to increasing PCI but the emergence of individualism and gender equality and greater levels of education in the society.

2. **Complex Relationship between PCI and Growth Rate.**

According to Professor Myint, the functional relationship between the PCI and the rate of growth in total income is more complex than what Leibenstein has set out in his theory. The relation of PCI with the rate of saving and investment depends on the distributional pattern of income and the effectiveness of financial institutions in mobilizing savings. Secondly, the relations between investment and output is not determined by a constant capital output ratio as is assumed by Leibenstein but depends on the extent to which the productive organization of the country can be improved and how far land saving innovations can be adopted to overcome the tendency to diminishing returns on additional investment even after the growth rate of population has reached the three per cent level.

Questions.

1. **Explain the concept of multiple equilibria with the help of a suitable example.**

2. **Coordination failure is the cause of Under-development. Explain.**
3. **Explain the theory of Big Push.**
4. **Why is there a need for 'Critical Minimum Effort' in developing countries? Explain Leibenstein's theory of critical minimum effort.**

CHAPTER 4

POVERTY, INEQUALITY AND DEVELOPMENT

PREVIEW.

- **Measurement of poverty – absolute and relative, Head-Count Index and Poverty Gap Indices.**
- **Policy options for alleviation of poverty.**
- **Measurement of income inequality.**
- **Economic growth and income inequality.**
- **Kuznets inverted 'U' hypothesis.**
- **Impact of inequality on development.**

INTRODUCTION.

The World Bank (WDR 1990) defines poverty as **"the inability of people to attain a minimum standard of living."** The UNDP, taking inspiration from Prof. Amartya Sen, defined Poverty in the 1990s as, **"the denial of opportunities and choices…to lead a long, healthy creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others…"** Looking at poverty as an economic phenomenon, the minimum standard of living definition is more acceptable because economic poverty is at the bottom of all other forms of poverty and that it can be clearly measured in terms of money. The World Bank measure of $ 1.25 (PPP) per person per day measures poverty across the world and all those who earn less than $ 1.25 (at 2005 prices) are considered to be living below the poverty line. **The World Bank measure is also known as the International Poverty Line (IPL).**

In 2005, an estimated 1.4 billion people, or one quarter of the population of the developing world, lived below the international line of $1.25 a day in 2005 prices. In 1980, there were 1.9 billion poor, or one half of the population. Progress was uneven across regions. The poverty rate in East Asia fell from almost 80 percent to under 20 percent over this period. By contrast it stayed at around 50 percent in Sub-Saharan Africa, though with signs of progress since the mid 1990s.

According to the World Bank, in 2004-05, 41.6% of India's population was considered to be living the IPL and the poverty gap was measured at USD PPP 10.8. At USD (PPP) 2 a day, **75.6** per cent of the population in India is found to be below the poverty line. According to the Planning Commission, Government of India, the rural poverty line was measured to be Rs.356.30 per month and 28.30% were found to be BPL. The urban poverty line was measured to be Rs.538.60 per month and 25.70% were found to be BPL. **In India as a whole, 27.50% or 30.172 Crore people were below the national poverty line in the year 2004-05**.

The World Bank figures for the same year are much higher because the IPL of USD 1.25 (PPP) per day translates to USD 38.02 (PPP) per month (USD $1.25 \times 365 \div 12 = 38.02$). The Rupee USD (PPP) exchange rate for the same year was Rs.16.20 per USD and therefore $38.02 \times 16.20 = $ Rs.615.92). Thus one will be able to notice the obvious gap between the IPL and the national urban poverty line which accounts for the difference in the percentage of people living below the poverty line.

MEASUREMENT OF POVERTY.

Absolute poverty is defined as the number of people who are unable to command sufficient resources to satisfy basic needs. They are counted as the total number living below a specified minimum level of real income (international poverty line). The IPL is an international standard measure of poverty and measures poverty as any person living on less than USD 1.25 (PPP) per day. Absolute poverty exists all over the world in varying magnitudes.

The Headcount Index. Absolute poverty may be measured by the number or 'headcount' **(H)** of those whose incomes fall below the absolute poverty line **Y_p.** When the headcount is taken as a fraction of the total population **(N)**, then we can define the **headcount index as H/N.** The poverty line is set at constant prices so that inter-temporal study can be undertaken. However, the absolute poverty line does not explain poverty gap of the people living below the poverty line. For instance, the IPL or the international absolute poverty line will consider all those who earn less than $ 1.25 per day as living below the poverty line and will make no distinction between those who earn nothing to those who earn $ 1.25 per day. Economists therefore calculate a poverty gap. **The POVERTY GAP measures the total amount of income necessary to raise everyone who is below the poverty line up to that line.** This measure reflects the depth of poverty as well as its incidence.

The poverty gap of two countries (A) and (B) is shown in Figure 4.1 below. **The area between the poverty line PV and the line that measures the annual income profile of the population measures the poverty gap.** Notice that in both the countries 50 per cent of the population is living below the poverty line but in Country 'A', the poverty gap is greater than country 'B'. It indicates that it will take more effort to eliminate absolute poverty in country 'A'. **The extent to which incomes of the poor lie below the poverty line is measured by Total Poverty Gap (TPG)** which is defined as follows:

$$TPG = \sum^{H} (Y_p - Y_i)$$

Where Y_p is the poverty line income and Y_i is the income of the household or the individual (i). In simple terms, TPG is the amount of money per day required to bring every poor person in the country up to the poverty line standard. For instance, if the income of a person is $ 1.00 per day, then the poverty gap is $ 0.25 per person and if the value of H = 100, then the TPG would be USD 25. On a per capita basis, the average poverty gap or the average income shortfall (APG) can be calculated as:

$$APG = TPG/H$$

Assuming the value of H to be 100, the APG in our example will be 25/100 = 0.25. The income shortfall can be measured with the Normalized Poverty Gap (NPG) = APG/Y_p. The value of NPG lies between zero and one. One indicates that the APG is equal to the poverty line and hence USD 125 will be required to lift the hundred people above the poverty line. Zero indicates poverty ratio is zero in the country. For instance, if the APG is 0.25, then the NPG will be 0.25/1.25 = 0.2. It indicates that if 20% of the poverty line income is spent for poverty alleviation of 100 persons, then the entire head count of 100 can be brought on par with the poverty line. If the APG is 1.25, then the NPG is equal to one i.e. 1.25/1.25 = 1. It shows that 100 per cent of the poverty line income will have to be spent on 100 persons to bring on par with the poverty line. The NPG helps easy cross country comparison and across time.

Relative Poverty is measured by estimating income distribution of the population in different fractile groups and comparing the levels of living of the top five to 10 per cent with the bottom five to 10 per cent of the population. Such comparison reflects the relative standard of living in a country. For instance, in India, the lowest 20 per cent of the households received 8.1 per cent of the total income whereas the top 20 per cent received 46.1 per cent of the total income in the year 1997 according to WDR 2000-01. The ratio of the highest 20 per cent to the lowest 20 per cent in 1997 was 5.69.

Fig.4.1 – Measurement of Poverty Gap.
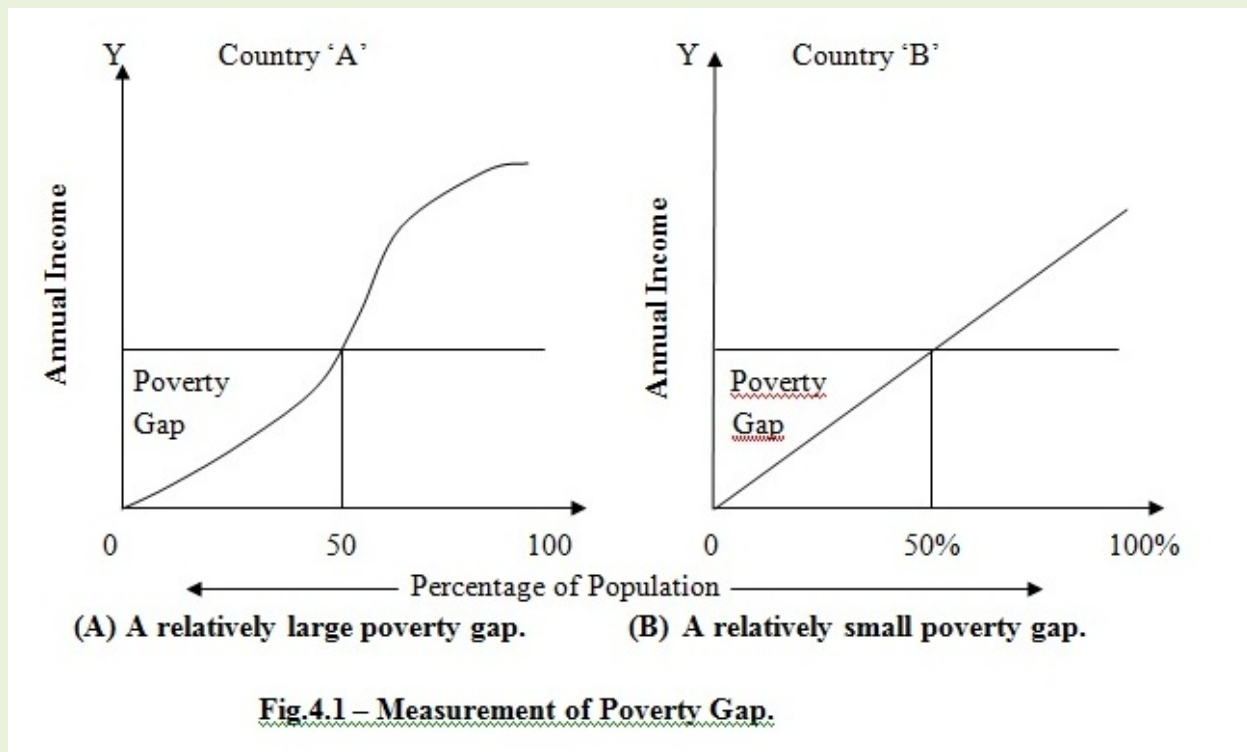
POLICY OPTIONS FOR ALLEVIATING POVERTY.

The policy approach and options for alleviating poverty has undergone change over the last six decades. In the 50s and 60s, it was believed that investment in physical capital and infrastructure would bring about economic growth and poverty will be reduced through the trickling down of growth. In the 1970s, it was found that trickle down was not taking place and hence the effort shifted towards investment in human capital. The World Development Report in 1990 advocated a two pronged strategy in terms of promoting labor intensive growth through economic openness and investment in infrastructure and providing basic services to poor in health and education. In the 1990s, the issue of poverty alleviation assumed great importance. The WDR 2000/01 proposed a three pronged strategy to reduce poverty in terms of promoting opportunity, facilitating empowerment and enhancing security. Opportunities were sought to be promoted by increasing jobs, credit, roads, electricity, schools, availability of water supply, sanitation and health services. Creation of sound and responsive institutions for the benefit of the poor was sought to facilitate empowerment. Security was sought to be enhanced by reducing vulnerability to economic shocks, natural disasters, ill health, disability and personal violence. Important policy options available for alleviating poverty are as follows:

1. **Raising Productivity of Small Scale Agriculture.**

The percentage of people dependent on agriculture in developing countries is in the range of 60 to 70 per cent. Growth in agricultural productivity in small size agricultural holdings was an important factor that helped reduction of poverty in China during the period 1975-85, in Malaysia and Indonesia in 1970-80 and in Japan, South Korea and Taiwan in the 50s and 60s. Provision of improved technologies to the farmers and other agricultural inputs at cheap rates, better social services, improved infrastructural facilities and agricultural research can help reduction in poverty in developing countries.

2. **Land Reforms and Redistribution of Land.**

The basic cause of poverty in the rural sector of developing countries is the extreme inequality in land ownership. Hence, extensive land reforms and land redistribution measures can help in reducing income inequalities and poverty. A study conducted by Marvin Sternberg for nine countries experienced major agrarian reforms (Japan, Taiwan, Egypt, Iran, Iraq, Kenya, Mexico, Cuba and Chile) concluded that the effect on income distribution was positive except in the case of Iraq. Another study by William Cline showed that land redistribution is the policy likely to achieve both production increases and reduce income inequalities. The WDR 2006 pointed out that access to land can give the poor give more voice in the political arena and can lead to higher investments in children's education, arresting the intergenerational transmission of poverty.

3. **Employment Programs.**

In order to increase employment opportunities in the urban areas, the Governments in UDCs can raise the volume of investment and also improve the investment income ratio. The government may also provide assistance for self employment by providing training in small scale entrepreneurship, financial assistance, supply of raw material at low rates, marketing facilities etc. In order to reduce rural unemployment, the government can provide credit, marketing facilities and agricultural inputs to the farmers.

Disguised unemployment is a major problem in UDCs. Programs of large scale labor intensive industrialization can attract surplus labor from the rural areas to urban areas. Capital intensive industrialization programs in UDCs like India and Brazil have proved that such programs bring little benefit to the disguisedly unemployed in the rural areas.

4. Promoting Small Scale and Informal Sector Industries.

Micro enterprises are the answer to the problem of employment generation in UDCs. East Asian economies reduced poverty through agricultural development and through the development of labor intensive industries. For instance, 50 per cent of the workers in the urban areas are either self employed or work in small and medium size industries employing less than 100 people in Japan. Developing countries must recognize the valuable contributions of the informal sector to employment and encourage its expansion.

5. Encouraging Labor Intensive Industrialization.

The Human Development Report, 1996 have shown that a number of UDCs have had growth but have generated little employment. In Pakistan from 1975 to 1992, real GDP grew by 6.3 per cent annually but employment by only 2.4 per cent. In India from 1975 to 1989, yearly GDP growth was 5 per cent but employment growth was only 2 per cent. During 1977-90, annual increase in employment in Egypt was 2 per cent whereas GDP growth was 6.6 per cent. In contrast, East Asian Economies focused on labor intensive activities such as textiles, clothing, electronics and intensifying small scale agriculture and this helped them to achieve high growth, full employment and rising wages.

6. Programs for the Development of the Rural Poor.

In order to bring about a direct reduction in poverty, many UDCs have launched programs for the development of the rural poor. These programs include: Resource and income development programs, Special Area Development Programs and Works programs for creation of supplementary employment opportunities. For example, the Government of India introduced a number of programs aimed at creating employment opportunities. These include the Small Farmers Development Agency, Marginal Farmers and Agricultural Laborers Development Agency, the National Rural Employment Program, Rural Landless Employment Guarantee Program, the Integrated Rural Development Program, Jawahar Rozgar Yojana, Swarna Jayanti Shahari Rozgar Yojana, Prime Ministers Rozgar Yojana, the National Rural Employment Guarantee Scheme, now known as Mahatma Gandhi National Rural Employment Guarantee Program.

7. Fiscal Policy.
The governments in developing countries can use Fiscal Policy to reduce income inequalities and poverty. The progressive taxation system can be steeply graded and the marginal rate of taxation can be increased to realize greater tax revenues. The governments can plug tax evasion by the richer sections of the society by improving the tax administration system. The World Development Report, 2006 has made two suggestions for raising tax revenues in developing

countries. These are: levying of inheritance tax and levying of more property taxes as they constitute a negligible part of the tax revenue.

8. Human Development.

High employment countries have invested heavily in human development in the areas of education, health and skills. They have also upgraded technical skills to enable workers to adapt to changing international conditions. South Korea invested $ 160 per person per year in health and education and Malaysia invested $ 150. India invested only $ 14 followed by Pakistan investing $ 10 and Bangladesh $ 5 in human development. More education gives the worker a wider range of self employment options and allows the person to choose more profitable alternatives. Investment in health and nutrition also contributes to reduction in poverty.

9. Subsidizing Goods and Services.

Developing countries can subsidize food, housing and other basic necessities for the benefit of the poor. The public distribution system can distribute all basic necessities to the poor at highly subsidized rates. The PDS can be used as an instrument for redistributing income in favor of the poor and also incentivize the farmers to produce more so that the entire population of poor can be covered by the system. The governments of UDCs must provide subsidized housing to the poor particularly to the landless laborers in rural areas and to the slum dwellers in urban areas. The governments can and must undertake steps to ensure the environmental improvement in slums by providing sewerage, surface drainage, public latrines, garbage clearance arrangements etc.

10. Providing Infrastructure.

Infrastructure investments increase opportunities for people by integrating them into regional and national systems of production and commerce and by improving their access to public services. According to a study conducted by Leipziger and others (2003) based on a sample of 73 countries (WDR 2006), a ten per cent improvement in the country's infrastructure index leads to a five per cent reduction in child mortality, a 3.5 per cent reduction in infant mortality and a 7.8 per cent reduction in maternal mortality. Better rural transport infrastructure can reduce transaction costs, expand access to markets and improve rural incomes. Investment in basic water and energy infrastructure can improve gender equity.

11. Social Security System.

Social security measures such as unemployment allowance, old age pension, free medical care to the poorer sections of the society can not only contribute to health and life expectancy but also increase the income earning capacity of the people. Hence, social security measures which are scantily provided in UDCs must be extended to the entire mass of poor population to bring about reduction in poverty.

MEASUREMENT OF INCOME INEQUALITY.

The study of income distribution and income inequalities all over the world suggests that fruits of economic growth and development are not shared equally by all income classes in a society. Different sections of the society and different classes will have different abilities to earn and therefore income inequalities will always remain as a natural facet of all societies. However, it is not income inequality per se but the extent and degree of income inequalities that all societies are plagued with, is a matter of concern. Greater the income inequalities lesser will be the economic welfare of the lower classes of the society. Apart from the ability to earn, there are a number of socio-economic factors that determines income distribution in general and the ability to earn in particular. If incomes were equally distributed there would be no different economic classes i.e. there would be absolute economic equality or it would be a classless society. A classless society is not conducive to economic growth and development and hence a certain degree of economic inequality as ingrained by nature is essential to fuel the economic engine. However, if the income inequalities are wide and pervasive, the socio-economic scene would be one of plenty and poverty existing side by side as is the case of India and other less developed economies of Asia, Africa and Latin America. The seeds of social upheaval and mutiny are sown by extreme inequalities of income and wealth. In India, the lowest fifth with 20 per cent of the households received 8.1 per cent of the total income whereas the top 20 per cent of the households received 46.1 per cent of the total income in the year 1997 (Ref. WDR 2000/2001). The degree of economic inequality can be shown with the help of a Lorenz Curve.

The Lorenz Curve.

The Lorenz curve is an economic tool used to analyze income and wealth inequality. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients starting with the poorest individual or household. The Gini index measure the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. This index measures the degree of inequality in the distribution of family income in a country. The index is calculated from the Lorenz curve, in which cumulative family income is plotted against the number of families arranged from the poorest to the richest. The index is the ratio of (a) the area between a country's Lorenz curve and the 45 degree helping line to (b) the entire triangular area under the 45 degree line. The more nearly equal a country's income distribution, the closer its Lorenz curve to the 45 degree line and the lower its Gini index, e.g., a Scandinavian country with an index of 25. The more unequal a country's income distribution, the farther its Lorenz curve from the 45 degree line and the higher its Gini index, e.g., a Sub-Saharan country with an index of 50. If income were distributed with perfect equality, the Lorenz curve would coincide with the 45 degree line and the index would be zero; if income were distributed with perfect inequality, the Lorenz curve would coincide with the horizontal axis and the right vertical axis and the index would be 100.

Percentage share of income or consumption is the share that accrues to sub groups of population indicated by deciles or quintiles. Inequality in the distribution of income is reflected in the percentage share of income or consumption accruing to segments of the population ranked by income or consumption levels. The segments ranked lowest by household income typically receive the smallest share of total income. Fig. 4.2 shows the extent of inequality as listed in Table 4.1. It shows the pattern of absolute equality, absolute inequality and actual inequalities of income in India for the year 1997. There has been practically no change in the distribution of income of the poorest quintile because according to WDR 2011, the share of the poorest quintile in India has remained 8.1 per cent during the period 1995-2008.

Absolute equality is shown by column (4) in Table 4.1. When the numbers in column (4) are plotted in Fig. 4.2, a diagonal line is derived which is the line of absolute equality. Absolute inequality is shown in column (5) of the table and by the dashed right angled line in the figure. Both the lines of absolute equality and absolute inequality are hypothetical in nature. Actual income distribution as shown in column (6) will fall between the extremes of absolute equality and absolute inequality. The data in column (6) is derived from column (2) to plot the Lorenz curve. The actual Lorenz cure is depicted as the non-linear intermediate curve in the figure. This area between the line of absolute equality and the Lorenz curve indicates the deviation from absolute equality and thus shows the measure of degree of inequality of income distribution.

Table 4.1: Actual and Polar cases of Income Inequality in India for the year 1997.

Income Class of Households	Percentage of total income received by households in this class	Percentage of households in this class and lower ones	Percentage of Income received by this class and lower ones.		
			Absolute Equality	Absolute Inequality	Actual Distribution
(1)	(2)	(3)	(4)	(5)	(6)
Lowest fifth	8.1	20	20	0	8.1
Second fifth	11.6	40	40	0	19.7
Third fifth	15.0	60	60	0	34.7
Fourth fifth	19.3	80	80	0	54.0
Highest fifth	46.0	100	100	100	100.0

Source: Data in column (2) is obtained from WDR 2000/2001, P.282.
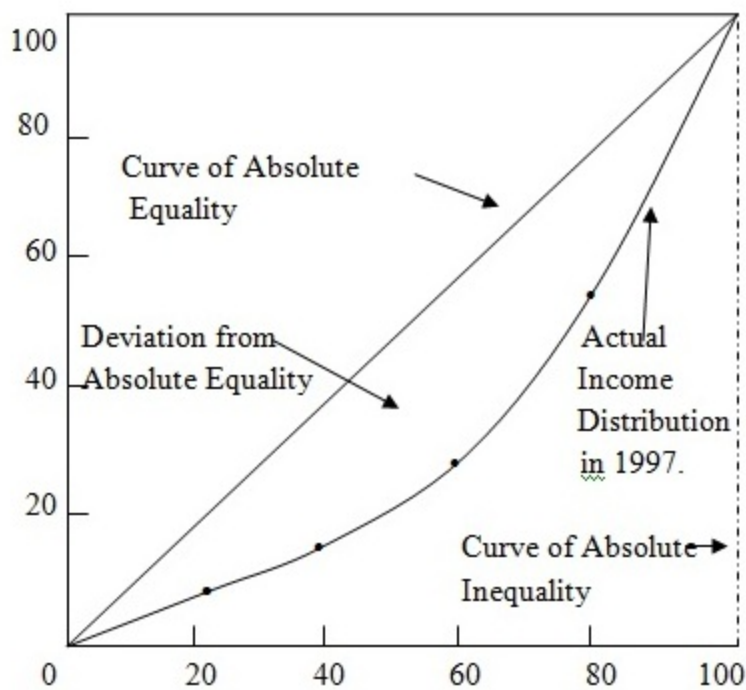
Fig.4.2 – Lorenz Curve Showing Income Inequality in India (1997).

ECONOMIC GROWTH AND INCOME INEQUALITY.

The World Bank estimates for 1983, 1989-90, 1992, 1994, 1997 and 2004-05 presented in Table 4.2 below relate to distribution of household expenditure. Table 4.2 reveals that the share of the lowest 20 per cent of the households has improved from 1983 to 1989-90 from 8.1 to 8.8. In 1992, it came down to 8.5 per cent and again went up to an all time of 9.2 per cent in 1994. However, thereafter, it had remained constant in 1997 and 2004-05.   The share of the second quintile had practically remained constant during the period 1983 to 1992. It went up marginally to 13.0 per cent in 1994. However, thereafter it declined to an all time low of 11.3 in 2004-05. The third quintile similarly experienced a decline in their share from 16.3 to 15.8 between 1983 and 1992. It went up marginally to 16.8 in 1994 only to decline to an all time low of 14.9 per cent in 2004-05. The fourth quintile also experienced a decline during the entire period from 22 per cent in 1983 to 20.4 per cent in 2004-05.   While the bottom 80% of the population experienced a decline in their incomes during the entire period, the top 20% of the households experienced gains during the entire period. Table 4.2 clearly indicates that income inequalities during this period have only worsened.   The program of economic reforms and the new economic policy have only helped the top 20% to prosper at the expense of the bottom of the 80 per cent. The ratio of the highest 20 per cent to the lowest 20 per cent has remained above 5:1 with the only exception of 1983 and 1994 when the ratio went down below five.

Table 4.2: Trends in the Distribution of Household Expenditure (1983 to 2004-05)

SNo.	Percentile Groups of Households	Percentage Share of Household Expenditure					
		1983	1989-90	1992	1994	1997	2004-05
1.	Lowest 20 per cent	8.1	8.8	8.5	9.2	8.1	8.1
2.	Second quintile	12.3	12.5	12.1	13.0	11.6	11.3
3.	Third quintile	16.3	16.2	15.8	16.8	15.0	14.9
4.	Fourth quintile	22.0	21.3	21.1	21.7	19.3	20.4
5.	Highest 20 per cent	41.4	41.3	42.6	39.3	46.1	45.3
6.	Highest 10 per cent	26.7	27.1	28.4	25.0	33.5	31.1
7.	Ratio of the highest 20 to the lowest 20 percent.	5.11	4.69	5.01	4.27	5.69	5.59
8.	Gini Index	-	-	33.8	29.7	37.8	36.8

Source: WDRs 1988, 1992, 1993, 1997, 1998-99, 1999-2000, 2000-01 and 2007.

The Gini indices for the years 1992, 1994, 1997 and 2004-05 had remained high with an exception of 29.7 in 1994. This indicates, income inequality in household expenditure had increased over the entire period with a marginal decline in 2004-05. Rising income inequality indicates that the fruits of economic growth are disproportionately shared by the top 20 per cent at the expense of the bottom 80 per cent of the population. Further, when the Gini index of India is compared with USA which was 40.8 in the year 2000, it can be safely concluded that economic growth takes place, the income inequalities in developing countries approach closer to the income inequalities in developed countries.

A study on the extent of inequality was conducted by the World Bank and University of Sussex, England. The study classified the extent of inequality into three broad categories namely: high, moderate and low inequality. The degree of inequality was measured on the basis of the share of the lowest 40 per cent of the population. The classification is given in Table 4.3.

Table 4.3 – Classification of Income Inequality.

S.No.	Share of the Lowest 40% of population	Income Inequality
1.	Less than 12 per cent.	High
2.	Less than 17 per cent but more than 12 per cent.	Moderate
3.	More than 17 per cent.	Low

KUZNET'S INVERTED 'U' HYPOTHESIS.

Economic growth in the developing countries was not benefitting the poor people and hence income inequalities were rising. Simon Kuznets had found that inequality has a tendency to increase in the process of development. However, when a country achieves high level of development, inequality declines. In order to arrive at this conclusion, Kuznets studied time-series data on income distribution of five countries consisting of India, Sri Lanka, Puerto Rico, the UK and the USA. He found that income inequalities had declined in the USA between 1913 and 1948. He also found out that there were greater inequalities in income in developing countries. In a later study with respect to income distribution in 18 countries, he found that his earlier conclusion was valid. He found that the shares of the upper income groups were larger in LDCs. This conclusion gave rise to Kuznet's Inverted 'U' hypothesis. According to this hypothesis, income inequality first rises and then falls as a country develops over time. Measuring GNP per capita on the X-axis and the Gini coefficients on the Y axis, we can obtain a hypothetical inverted 'U' as shown in Figure 4.3. Notice that as GNP per capita increases over time, income inequality increases up to a point i.e. the Gini coefficient is going up and after a point, the Gini coefficient begins to decline, indicating thereby that with further growth in per capita GNP, income inequality begins to decline.

Notice that as the GNP per capita increases over time from one to three thousand US dollars, the income inequality Gini coefficient increases from 0.25 to 0.55 and thereafter as the GNP per capita further increases from three to six thousand US dollars, the income inequality index begins to decline.

Fig.4.3: The "Inverted U" Kuznets Curve.
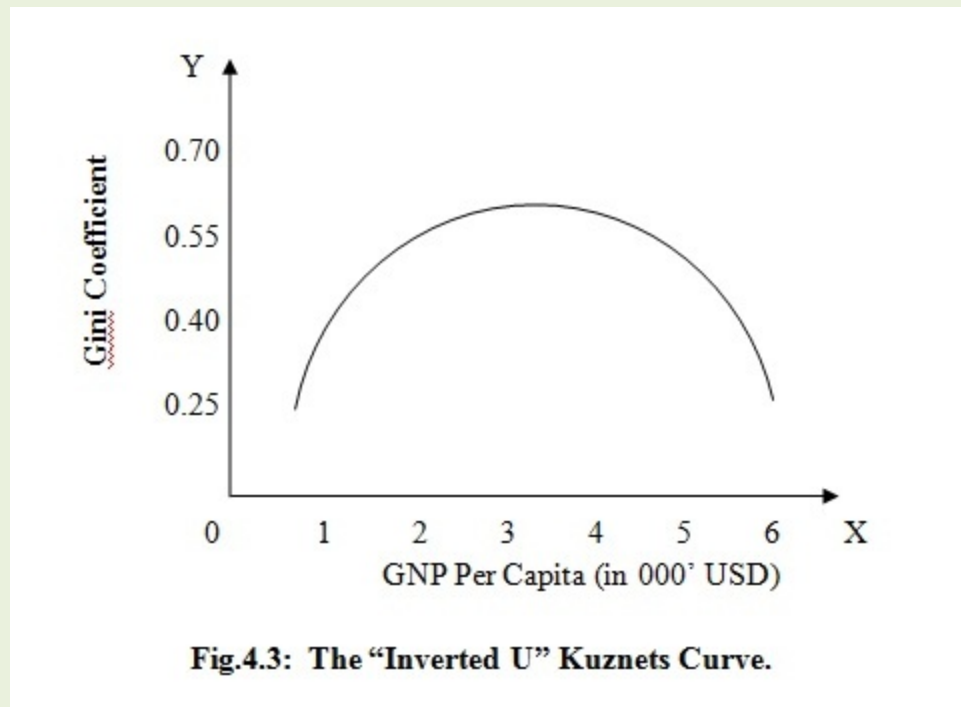
Evidence of the Inverted 'U' Hypothesis.

In 1960, Irving Kravis examined patterns of income inequality in 11 countries and found that the hypothesis was true. He found greater income inequality in countries like Puerto Rico, El Salvador, Sri Lanka and Italy than in United States, Great Britain, Japan and Canada. There was much less inequality in Denmark, Netherlands and Israel. F Paukert carried out study in 56 countries in 1965 and drew the same conclusion. He classified countries in terms of per capita GDP in US dollars and the corresponding Gini coefficient. The results of his study are enumerated in Table 4.4.

Table 4.4 – GDP Per Capita and Gini Coefficient.

SNO.	GDP Per Capita (in USD)	Average Gini Coefficient
1.	< $ 100	0.419
2.	$ 201 – 300	0.499
3.	$ 500 - 1000	0.438
4.	>$ 2000	0.365

However, instead of average Gini coefficients, when actual Gini coefficients of a range of countries in a given income range were compared, variations in Gini coefficients were so large so that no conclusions were possible. For example, over the income range $ 201 to $ 300, Gini coefficients for different countries vary from 0.36 to as high as 0.62.

Another study conducted by MS Ahluwalia for 60 countries with GNP figures measured in US dollars at 1970 prices also supported Kuznets hypothesis.

Critical Appraisal of Inverted 'U' Hypothesis.

Kuznets hypothesis is criticized on the following grounds:

1. The study conducted by Kuznets for the US economy relied on the 1913-48 data during which income inequalities declined. However, data for the earlier period was not available. Many economists who support the trickle down hypothesis have found Kuznets thesis a convenient tool to justify non-intervention by the State in economic development. They argue that if the UDCs do not bother about the short run social costs of development, economic growth will automatically reduce income inequalities and poverty in the long run.
2. For most of the UDCs, time-series data are not available. It is therefore difficult verify Kuznets hypothesis
3. In the case of USA, after 1948, income inequality remained constant and increased after 1970. Therefore, no concrete conclusions can be drawn.
4. The decline in income inequality was a capital-income phenomenon. In France, wage inequality remained stable during the period 1900-50. Capital income fell due to wars, inflation, recession and depression during the period. Low wage rural workers were replaced by low wage urban workers and hence wage inequality did not change.

Due to these reasons, Piketty concludes that the reasons why inequality declined in the industrialized countries during 1900-50 have nothing to do with the trickle down hypothesis advocated by Kuznets in the 1950s. Income inequalities cannot decline automatically. Decline in income inequalities depend upon the policies and institutions adopted by the governments and societies as a whole.

IMPACT OF INEQUALITY ON DEVELOPMENT.

The classical economists believed that inequality has beneficial effect on economic development whereas the neo-classical economists advocated the belief that income inequality and growth are unrelated issues. However, modern studies indicate that income inequalities have adverse effects on the process of growth and development.

The adverse impact of income inequality on growth and development can be explained in the following terms:

1. High income inequality will force the government to follow redistributive policies. Redistributive policies adversely affect investment in physical and human capital and hence reduce growth.
2. High income inequalities may contribute to social and political instability which may affect investment and growth.
3. With high income inequality, the rate of saving in the economy would be lower. The highest rate of marginal savings is made by middle classes. The rich saves only a small fraction of their income.
4. High income inequality leads to an overemphasis on higher education at the expense of universal primary education which may lead to further increases in economic inequality.
5. High inequality in land ownership affects the efficiency of agricultural operations. Small and marginal holdings are less efficient than medium and large holdings.
6. High income inequality may affect social stability and solidarity.
7. High income inequalities in a democratic country may lead the poor to support populist policies that would lead to improper allocation of resources.
8. Government may emphasize on the redistribution of income rather than increasing the size of the income.

Questions.

1. What is meant by the term 'absolute poverty'? What is a head count ratio? Compare the poverty gap ratio with the head count ratio.
2. Explain the policy options available for the alleviation of poverty.
3. What is personal distribution of income? Draw Lorenz curve and calculate Gini ratio for the measurement of income inequality.
4. Explain by giving reasons Kuznets inverted 'U' hypothesis.
5. Explain the impact of economic inequality on development.

QUESTION BANK

GROWTH AND DEVELOPMENT

SEMESTER V

Module I   -   Meaning of Development and Relevant Concepts.

1. Distinguish between growth and development.
2. What is Human Development? Explain the construction of the Human Development Index.
3. Describe the importance of HDI. How is it calculated? What are its limitations?
4. Write a note on Sen's capability approach.
5. Explain the role of the market and the State in the development process.
6. Explain the meaning of market failure. What role can State play in rectifying market failure?
7. Explain the relationship between environmental sustainability and development.
8. Write a note on GDI.

Module II   -   Classical theories of growth.

1. Explain Rostow's theory of economic growth.
2. Explain the Harrod-Domar model of economic growth.
3. Explain Lewis's model of unlimited supply of labor and economic growth.
4. Explain Solow's theory of economic growth.
5. Critically examine Rostow's stages of economic growth theory.
6. Explain the term 'structural change' in the economy. How does Lewis model of unlimited supply of labor explain the structural change?
7. Explain Solow's model with the help of a diagram. Show how steady state changes with the change in investment rate.

Module III-Contemporary Models of Development and Under-development.

1. Explain the endogenous theories of growth w.r.t. Romer Model.
2. Under-development is a consequence of co-ordination failure. Explain.
3. Explain the Big-push theory of economic growth.
4. Explain Lebenstein's model of economic growth.
5. Outline Romer's endogenous growth model. Why is it called an endogenous growth model?
6. Explain the concept of multiple equilibria with the help of suitable example.
7. Why is there a need for 'Critical Minimum Effort' in developing countries? Explain Leibenstein's theory of critical minimum effort.

Module IV   -   Poverty, Inequality and Development.

1. **What is poverty? Distinguish between absolute and relative poverty.**
2. **Write notes on Head Count Index and Poverty Gap Index.**
3. **Explain the policy options available for alleviating poverty.**
4. **Explain the impact of inequality on development.**
5. **Explain the measurement of economic inequality.**
6. **Write a note on Kuznet's inverted 'U' hypothesis.**
7. **What is meant by the term 'absolute poverty'?   What is a head count ratio? Compare the poverty gap ratio with the head count ratio.**
8. **What is personal distribution of income? Draw Lorenz curve and calculate Gini ratio for the measurement of income inequality.**
9. **Explain by giving reasons Kuznet's inverted 'U' hypothesis.**

PAPER - V

GROWTH AND DEVELOPMENT

Preamble: The paper aims at introducing concepts, theories and policies regarding growth and development. The meaning of development as it has evolved over the years is clarified. The contemporary as well as classic theories of growth, development and underdevelopment are considered in detail. Theories and issues related to population, poverty and human resources are considered. Urban and rural aspects of the development process are studied and so too are the international aspects of development. The approach has been to cover all important areas of development economics. The paper should be taught with reference to Indian economic conditions.

Semester V.

1.   **Meaning of Development and Relevant Concepts**:   (12 lectures)

Distinction between growth and development, human development, Human Development Index, Gender Development Index, Sen's capabilities approach, environmental sustainability and development, Market and State as agencies of development

2.   **Classical Theories of Development**   (14 lectures)

Rostow's stages of growth, Harrod-Domar growth model, Structural change and Lewis' model of unlimited supplies of labor, Solow's growth theory

3.   **Contemporary Models of Development and Underdevelopment** (10 lectures)

Theories of endogenous growth with special reference to Romer's model, underdevelopment as coordination failure, multiple equilibria, the big push theory and Liebenstein Theory of Critical Minimum Efforts.

4.   **Poverty, Inequality and Development**   (14 lectures)

Measurement of poverty – absolute and relative, Head-Count Index and Poverty Gap Indices, policy options for alleviation of poverty, measurement of income inequality, economic growth and income inequality – Kuznet's inverted U hypothesis, impact of inequality on development.

Semester VI.

5. **Population and Human Resources** (14 lectures)

Demographic transition, causes of high fertility in developing countries – the microeconomic household theory of fertility, consequences of high fertility, approaches to population policy, contribution of education and health to economic growth and development, role of health in economic development

6. **Urbanization and Informal Sector** (12lectures)

Causes and effects of urbanization, Harris-Todaro model of rural-urban migration, migration and development, policies for the urban informal sector, women in the informal sector, the microfinance revolution.

7. **Agricultural Transformation and Rural Development** (10 lectures)

Role of agriculture in economic development, rural credit markets: organized and unorganized, policies for rural development, agriculture and the WTO.

8. **International Aspects of Development** (14 lectures)

Trade strategies for development: inward looking and outward looking, financing of balance of payments deficits, foreign direct investment and multinational corporations, foreign portfolio investments and developing countries, role of IMF and the World Bank – stabilization and structural adjustment programs.

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3. Thirlwall, A.P. *Growth and Development* 8e. New York: Palgrave MacMillan, 2005.

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