D.N.R.COLLEGE (A) BHIMAVARAM

P.G. DEPARTMENT OF ECONOMICS

E-NOTES

M.A ECONOMICS

SEMESTER –IV PAPER – I

ECONOMICS OF GROWTH&DEVELOPMENT

Prepared by A.RAMESH

UNIT-I

TOIPC: ECONOMIC GROWTH AND ECONOMIC DEVELOPMENT

The terms 'economic growth' and 'economic development' sound similar. However, the two concepts are different. While economic growth is a quantitative concept, economic development is a qualitative concept.

What is Economic Growth?

Economic growth can be referred to as the increase that is witnessed in the monetary value of all the goods and services produced in the economy during a time period. It is a type of quantitative measure that reflects the potential increase in the number of business transactions taking place in the economy.

It can be measured in terms of the increase in the aggregate market value of additional goods and services produced by using economic concepts such as GDP and GNP.

Economic growth is a narrow concept when compared to economic development.

What is Economic Development?

Economic development refers to the process by which the overall health, well-being, and academic level of the general population of a nation improves. It also refers to the improved production volume due to the advancements of technology.

It is the qualitative improvement in the life of the citizens of a country and is most appropriately determined by the Human Development Index (HDI). The overall development of a country is based on many parameters such as the creation of job opportunities, technological advancements, standard of living, living conditions, per capita income, quality of life, improvement in self-esteem needs, GDP, industrial and infrastructural development, etc.

Differences Between Economic Growth and Economic Development

Let us look into the most significant points of difference between economic growth and economic development from the following table:

Economic Growth	**Economic Development**
Definition	
It refers to the increase in the monetary growth of a nation in a particular period.	It refers to the overall development of the quality of life in a nation, which includes economic growth.
Span of Concept	
It is a narrower concept than that of economic development.	It is a broader concept than that of economic growth.
Scope	
It is a uni-dimensional approach that deals with the economic growth of a nation.	It is a multi-dimensional approach that looks into the income as well as the quality of life of a nation.
Term	
Short-term process	Long-term process
Measurement	
Quantitative	Both quantitative and qualitative
Applicable to	
Developed economies	Developing economies

Government Support	
It is an automatic process that may or may not require intervention from the government	It requires intervention from the government as all the developmental policies are formed by the government
Kind of changes expected	
Quantitative changes	Quantitative as well as qualitative changes
Examples	
GDP, GNP	HDI, per capita Income, industrial development

How to Measure Economic Growth

The most common measure of economic growth is real GDP. This is the total value of all goods and services produced in an economy, with that value adjusted to remove the effects of inflation. There are three different methods for looking at real GDP.

- **Quarterly growth at an annual rate:** This looks at the change in the GDP from quarter to quarter, which is then compounded into an annual rate. For example, if one quarter's change is 0.3%, then the annual rate would be extrapolated to be 1.2%.
- **Four-quarter or year-over-year growth rate:** This compares a single quarter's GDP from two successive years as a percentage. It is often used by businesses to offset the effects of seasonal variations.
- **Annual average growth rate:** This is the average of changes in each of the four quarters. For example, if in one year there were four-quarter rates of 2%, 3%, 1.5%, and 1%, the annual average growth rate for the year would be 7.5% ÷ 4 = 1.875%.

Note

GDP, the most popular way to measure economic growth, is calculated by adding up all of the money spent by consumers, businesses, and the government in a given period. The formula is: GDP = consumer spending + business investment + government spending + net exports.

Of course, measuring the value of a commodity is tricky. Some goods and services are considered to be worth more than others. For example, a smartphone is more valuable than a pair of socks. Growth has to be measured in the value of goods and services, not just the quantity.

Another problem is that not all individuals place the same value on the same goods and services. A heater is more valuable to a resident of Alaska, while an air conditioner is more valuable to a resident of Florida. Some people value steak more than fish and vice versa.

A common approximation is the current market value. In the United States, this is measured in terms of U.S. dollars and added together to produce aggregate measures of output, including GDP.

There are alternatives to GDP. For example, the World Bank uses gross national income per capita, which includes income sent back by citizens working overseas, to measure economic growth, classify countries for analytical purposes, and determine borrowing eligibility.3

How to Generate Economic Growth

Economic growth is dependent on the following four contributory areas:

Increase in Physical Capital Goods

The first is an increase in the amount of physical capital goods in the economy. Adding capital to the economy tends to increase the productivity of labor. Newer, better, and more tools mean that workers can produce more output per time period.

For a simple example, a fisherman with a net will catch more fish per hour than a fisherman with a rod. However, two things are critical to this process.

Someone in the economy must first engage in some form of saving in order to free up the resources

to create the new capital. In addition, the new capital must be of the right type, in the right place, and activated at the right time for workers to actually use it productively.

Improvements in Technology

A second method of producing economic growth is through technological improvements. An example of this is the invention of gasoline fuel. Prior to the discovery of its energy-generating power, the economic value of petroleum was relatively low. This changed when the use of gasoline proved a more productive method of transporting goods.

Improved technology allows workers to produce more output with the same stock of capital goods by combining them in novel ways that are more productive. Like capital growth, the rate of technical growth is highly dependent on the rate of savings and investment, as they are necessary to engage in research and development.

The four factors of production are land and natural resources, labor, capital equipment, and entrepreneurship.

Growth of the Labor Force

Another way to generate economic growth is to grow the labor force. All else being equal, more workers generate more economic goods and services.

During the 19th century, a portion of the robust U.S. economic growth was due to a high influx of cheap, productive immigrant labor. However, as with capital-driven growth, there are some key conditions to this process.4

Increasing the labor force necessarily increases the amount of output that must be consumed in order to provide for the basic subsistence of the new workers, so the new workers need to be at least productive enough to offset this and not be net consumers.

Also, just like additions to capital, it is important for the right type of workers to flow to the right jobs in the right places in combination with the right types of complementary capital goods in order to realize their productive potential.

Increase Human Capital

The last method is to increase human capital. This means laborers become more accomplished at their crafts, raising their productivity through skills training, trial and error, or simply more practice. Savings, investment, and specialization are the most consistent and easily controlled methods.

Human capital in this context can also refer to social and institutional capital. Behavioral tendencies toward higher social trust and reciprocity, along with political or economic innovations such as improved protections for property rights, are types of human capital that can increase the productivity of the economy.

TOPIC: Physical Quality of Life Index

Advantages and Drawbacks of Physical Quality of Life Index: Life expectancy rate, Infant mortality, Basic literacy rate, etc

Physical Quality of Life Index

Morris David Morris created the Physical Quality of Life Index (PQLI) for the Overseas Development Council in the mid-1970s. It was formed in response to unhappiness with the use of GNP as a development indicator.

PQLI is a step forward, but it still suffers from the same issues as other attempts to quantify quality of life. It has also been chastised since infant mortality and life expectancy are so closely related. The United Nations Human Development Index is a more generally used metric of happiness.

- The Physical Quality of Life Index (PQLI) is an effort to quantify a nation's overall standard

of life or even well.

- The number is calculated by taking the average of three facts and figures: basic literacy rate, newborn fatality rate, and their life span at one year, all of which are evenly valued on a 0 to 100 scale.
- It was discovered in the middle of the 1970s by Morris David Morris for the International Technical Committee as one of a number of metrics produced in response to discontent through the use of GNP as a proxy for economic growth.
- While the Physical Quality of Life Index may be considered an improvement, it shares the basic difficulties associated with quantifying the quality of life. Additionally, it has been questioned due to the substantial overlapping between newborn mortality.
- Life expectancy rate represents the average number of years that an individual is predicted to live. According to the 2011 census, the average age in India is 66.8 years.
- Infant mortality is the number of newborns that die during the first year of infancy for every 1000 births. According to the 2011 census, it is 47 per 1000 people.
- Basic literacy rate: Any individual above the age of seven who can read and comprehend in at least one language is deemed educated. According to the 2011 census, it stands at 74.04 per cent in India.
- Each of the aforementioned criteria is scored on a scale of 1 to 100, with 1 being the poorest performance and 100 representing the highest performance. The Physical Quality of Life Index is then computed by comparing these three parameters and allocating equal merit to each.

Advantages of PQLI

- The advantages of PQLI are that it aids in comprehending the economy's overall wellbeing and the effectiveness with which its welfare measures are executed. This assists the government in implementing remedial measures.
- The technique used to calculate the Physical Quality of Life Index is universally accepted. As a result, it may be used to compare nations, which enables comparatively impoverished countries to take remedial action, which is one of the advantages of PQLI.
- The three metrics, namely life expectancy, infant mortality, and literacy, all accurately reflect the country's population wellbeing. A nation that scores well on all three parameters is considered to have a successful economy. It is another advantage of PQLI.
- The Physical Quality of Life Index evaluates the country's sharing of income. A nation cannot have a high life expectancy, a long life expectancy, or a low newborn mortality rate unless a significant proportion of its inhabitants gain from economic progress.

Drawbacks of PQLI

- The Physical Quality of Life Index overlooks a variety of elements that affect one's quality of life, including job, housing, justice, life expectancy rate, and state pensions.
- The Physical Quality of Life Index is an arithmetic mean of the literacy rate, infant mortality, and life expectancy rate, with each element receiving equal weighting. However, it is hard to see why all elements should be given equal weight.
- The Physical Quality of Life Index does not account for a country's economy changing structurally.

Conclusion

The physical quality of life index is an essential component for countries. As, it can be used to compare nations, which aids the comparatively impoverished countries in taking remedial action. The three indicators, namely life expectancy, infant mortality, and literacy rate, accurately reflect the country's citizens' well-being

Human Development Index Definition

The Human Development Index (HDI) is a single index measure that aims to record the three key dimensions of human development: access to knowledge, a decent standard of living, and long and healthy life. In other words, the Human Development Index is practiced to measure how development has improved human life.

Indicators of Human Development

Human development index rank

- India has been on 130th rank in Human Development Index.

Life expectancy

- It is the age by which a particular person belonging to a particular age is expected to live.
- Life expectancy at birth in India: Males: 67.34 years , Females: 69.64 years

Infant mortality rate

- It is the total number of infants dying below the age of 1 year out of 1000 babies.
- Infant mortality rate in India is 40.5 infants.

Maternal mortality rate

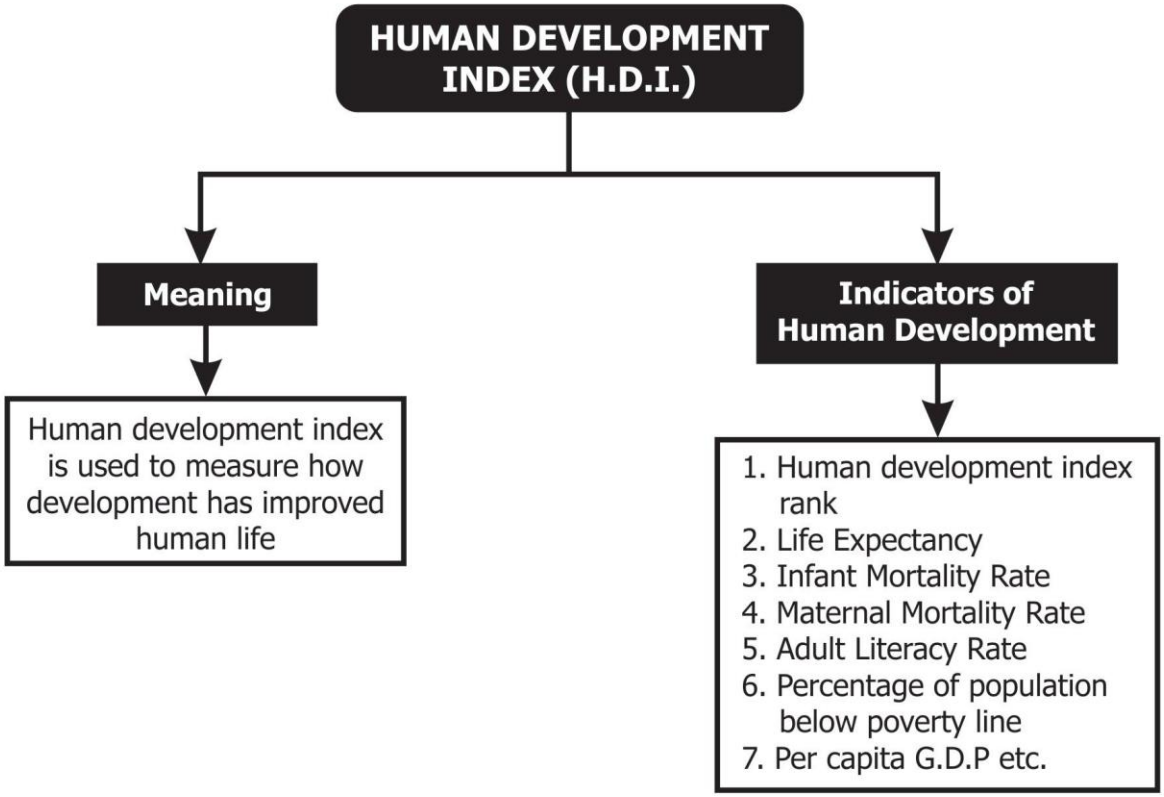
- It is the total number of dying mothers out of 1000 mothers while giving birth to babies.
- According to the 2011–13 census, maternal mortality rate in India is 167 deaths.

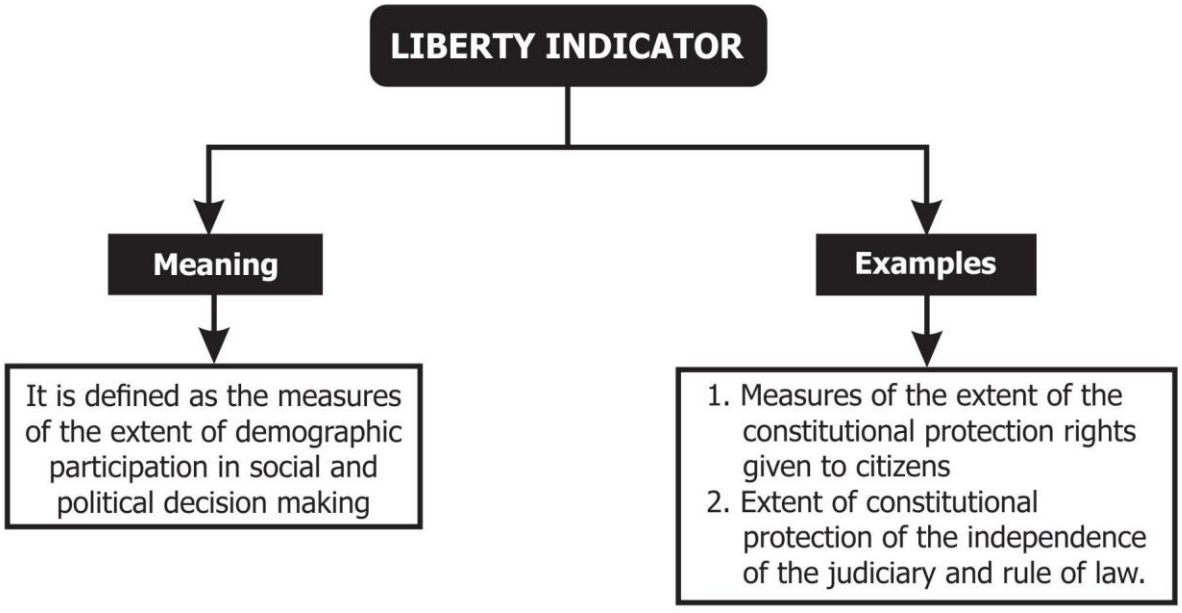
Adult literacy ratio

- It refers to the number of people of both the sexes, i.e., male and female aging more than 15 years having the ability to read and write.

Percentage of the population below poverty line

- People below the poverty line are categorised according to calories consumed by each person per day, which is 2400 in rural areas and 2100 in urban areas.
- Any person consuming calories less than the minimum limit mentioned above is said to be below the poverty line.


HUMAN DEVELOPMENT INDEX (H.D.I.)
Meaning
Human development index is used to measure how development has improved human life
Indicators of Human Development
1. Human development index rank
2. Life Expectancy
3. Infant Mortality Rate
4. Maternal Mortality Rate
5. Adult Literacy Rate
6. Percentage of population below poverty line
7. Per capita G.D.P etc.


LIBERTY INDICATOR
Meaning
It is defined as the measures of the extent of demographic participation in social and political decision making
Examples
1. Measures of the extent of the constitutional protection rights given to citizens
2. Extent of constitutional protection of the independence of the judiciary and rule of law.

UNIT-II

TOPIC:Classical Growth Theory

Classical growth theory is a modern category of economic theory that is applied to the work of several economists who wrote about the process and sources of economic growth in their time, roughly the 18th and 19th centuries. Two important theorists associated with these ideas include Adam Smith and David Ricardo.

KEY TAKEAWAYS

- Classical growth theory was developed by (mostly British) economists during the Industrial Revolution.
- Classical growth theory explains economic growth as a result of capital accumulation and the reinvestment of profits derived from specialization, the division of labor, and the pursuit of comparative advantage.
- The conclusions of classical growth theory supported the ideas of free trade among nations, individual free enterprise, and respect for the accumulation of private property.

Understanding Classical Growth Theory

Classical growth theory was developed alongside the Industrial Revolution in Great Britain. Analysis of the process of economic growth was a central focus of these classical economists. Classical economists sought to provide an account of the broad forces that influenced economic growth and of the mechanisms underlying the growth process.

The division of labor, the gains from trade, and the accumulation of capital were seen as the main driving forces of economic growth. Productive investment and the reinvestment of profits were the mechanisms that produced continuous economic growth, so changes in the rate of profit were a decisive reference point for an analysis of the long-term evolution of the economy.

They argued that individual initiative, under freely competitive conditions to promote individual ends, would produce beneficial results to society as a whole. Their conclusions supported the adoption of free trade, respect for private property, and individual free enterprise. Meanwhile, conflicting economic interests could be reconciled by the operation of competitive market forces and the limited activity of responsible government.

These economists' ideas diverged from previous economic ways of thinking. Their critique of feudal society that came before them was based on the observation among others: that a large portion of the social product was not so well invested but was consumed unproductively by the ruling class. They followed the French physiocrats in studying the economic welfare of a nation as a whole, as opposed to the mercantilist focus on the accumulation of gold for the king. They split from the physiocrats by focusing on, and celebrating, industry and capital accumulation as a source of economic prosperity.1

Adam Smith and the Wealth of Nations

Scottish economist Adam Smith was the leading figure of the classical theory of growth. Smith wrote that the division of labor among workers into more specialized tasks was the driver of growth in the transition to an industrial, capitalist economy. As the Industrial Revolution matured, Smith argued that the availability of specialized tools and equipment would allow workers to further specialize and thereby increase their productivity. In order for this to happen, ongoing capital accumulation was necessary, which depended on the owners of capital being able to keep and reinvest profits from their investments. He explained this process with the metaphor of the "invisible hand" of profits, which would push capitalists to engage in this process of investment, productivity gains, and reinvestment by seeking their own personal gain, and indirectly the benefit of the entire nation.

David Ricardo and the Gains from Trade

David Ricardo extended Smith's theory to demonstrate how trade could lead to further economic

prosperity on top of the gains from specialization and the division of labor. He developed the concept of comparative advantage as a basis for specialization and applied this not only to workers in a single economy but to separate nations that could trade with one another. Ricardo argued that by specializing in activities for which they each had the lowest opportunity cost and then trading their surplus product, nations (and by extension workers and firms within an economy) could all be made better off. Ricardo's theory of comparative advantage strengthened the foundation of Smith's theory of specialization and division of labor as a source of economic growth.

The Harrod-Domar Growth Model

The Harrod-Domar models of economic growth are based on the experiences of advanced capitalist economies to analyse the requirements of steady growth in such economy. Th economic growth model stresses the importance of determinants of

1. It creates income which is regarded as the 'demand
2. It augments the productive capacity of the economy by increasing its capital stock which is regarded as the 'supply effect' of investment.

The main assumptions of the Harrod-Domar models are as follows:

1. A full-employment level of income already exists.
2. There is no government interference.
3. The model is based on the assumption of closed economy.
4. There are no lags in adjustment of variables.
5. The average propensity to save (APS) and marginal propensity to save (MPS) are equal to each other. Symbollically, $S/Y = \Delta S/\Delta Y$
6. Both propensity to save and "capital coefficient" (i.e., capital-output ratio) are given constant.
7. Income, investment, savings are all defined in the net sense and hence they are considered over and above the depreciation.
8. Saving and investment are equal in ex-ante as well as in ex-post sense.

Given the above main general assumptions, we shall discuss both models separately as below. Although Harrod and Domar models differ in some aspects, they are similar in substance as both the models stress the essential conditions of achieving and maintaining steady growth.

The Harrod Model:

An English economist, Henry Roy Forbes Harrod (13 February 1900 – 8 March 1978) tries to show in his model how steady growth may occur in the economy. Once the steady growth rate is interrupted and the economy falls into disequilibrium, cumulative forces tend to perpetuate this divergence thereby leading to either secular deflation or secular inflation.

The Harrod Model is based upon three distinct rates of growth as below:

1. The actual growth rate (G)
2. The warranted growth rate (G_w)
3. The natural growth rate (G_n)

1. **The actual growth rate (G):** It is defined as the ratio of change in income (ΔY) to the total income (Y) in the given period. Mathemaically; $G = \Delta Y/Y$

The actual growth rate (G) is determined by:

(a) Saving-Income ratio (s) known as the Average Propensity to Save which is expressed as $s = S/Y$

(b) Capital- Output ratio (C) which is expressed as $C=\Delta K/\Delta Y$ where ΔK denotes change in Capital stock which equal investment (I)

The relationship between the actual growth rate and its determinants is expressed as: GC = s (1)
Now;

Since

$$G = \frac{\Delta Y}{Y}$$

$$C = \frac{\Delta K}{\Delta Y} = \frac{I}{\Delta Y} \qquad [\because \Delta K = I]$$

Because $s = \frac{S}{Y}$

Substituting the value of G, C, and s in equation (1), we get

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

or

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

or $I = S$

The above equation so derived explains that the condition for achieving the steady state growth is that ex-post (actual, realized) savings must be equal to ex-post investment.

2. **The warranted growth rate (G_w):** Warranted growth Rate also known as Full-capacity growth rate refers to that growth rate of the economy when it is working at full capacity. In other words, G_w is interpreted as the rate of income growth required for full utilization of a growing stock of capital.

Warranted growth rate (G_w) is determined by capital-output ratio and saving- income ratio and their relationships is expressed as:

$G_w C_r = s$

or Gw=s/Cr

where ;

C_r denotes the amount of capital-output ratio needed to maintain the warranted s denotes the saving-income ratio.

The above equation reflects that if the economy is to advance at the steady rate of Gw at its full

capacity, income must grow at the rate of s/Cr per year.

3. **The natural growth rate (G_n):** The natural growth rate also known as the potential or the full employment rate of growth is the rate of economic growth required to maintain full employment. The natural growth rate regarded as 'the welfare optimum' by Harrod is the maximum growth rate which an economy can achieve with its available natural resources.

The Natural growth rate is determined by natural conditions such as labor force, natural resources, capital equipment, technical knowledge etc. The third fundamental relation in Harrod's model showing the determinants of natural growth rate is expressed as: G_nC_r = or ≠s

Condition for the Achievement of Steady Growth:

According to Harrod, the economy can achieve steady growth when there is equality between G and G_w at the same time between C and C_r. This condition can be expressed as:

$G = G_w$ and $C = C_r$

Harrod states that a slight deviation of G from G_w will lead the economy away and further away from the steady-state growth path. Thus, the equilibrium between G and Gw at this junction is considered as a knife-edge equilibrium.

Instability of Growth:

As discussed above, to achieve steady growth in economy, a balance between G and G_w must be maintained otherwise the economy will be in disequilibrium. Therefore, Harrod analysed two situations when equilibrium condition is not satisfied:

(*i*) If $G > G_w^*$ then $C < C_r$ (*ii*) If $G < G_w$ then $C > C_r$

The first situation implies that if such situation occurred, the economy will find itself in the quagmire of inflation. This is because under this situation, the growth rate of income being greater than the growth rate of output, the demand for output would exceed the supply of output.

In contrast, the second situation implies if such situation occurred, the economy will lead to secular stagnation because actual income grows more slowly than what is required by the productive capacity of the economy leading to an excess of capital goods (C>Cr).

For once if steady growth equilibrium path is disturbed, it is not self-correcting. Therefore, it follows that one of the major tasks of public policy is to bring G and Gw together in order to maintain long-run stability. For this purpose, Harrod introduces his third concept of the natural rate of growth. The whole argument can also be shown with the help of the following diagram:

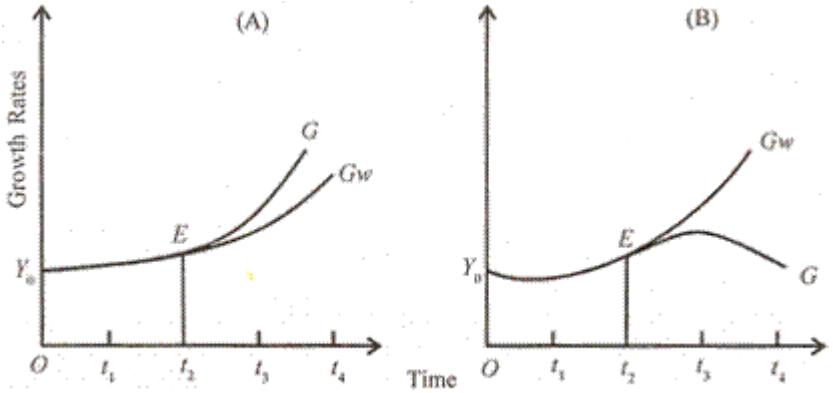


Fig. 1.

As shown in Panel –(A) of the above figures, starting from the initial full employment level of income Y_0, the actual growth rate G follows the warranted growth path Gw up to point E through period t_2. However, from t_2 onward G deviates from Gw and is higher than the latter. In subsequent periods, the deviation between the two becomes larger and larger.

As shown in Panel–(B), from period t_2 onward, G deviates from Gw where G falls below Gw and the two continue to deviate further away in subsequent periods.

Interaction of G, G_w and G_n:

To achieve full employment equilibrium growth, the economy must satisfy the condition where Gn=Gw = G. But this is a knife-edge balance. For once there is any divergence between natural, warranted and actual rates of growth conditions of secular stagnation or inflation would be generated in the economy. The same argument can be shown through the following diagram:

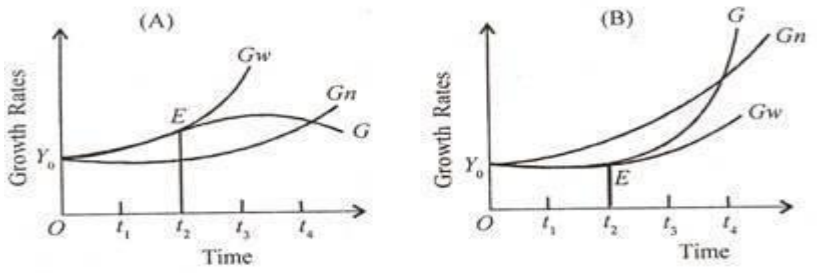


Fig. 2.

As shown in Panel-(A), if Gw>Gn, secular stagnation will develop resulting in unemployment. In such a situation, Gw is also greater than G for most of the time because the upper limit to the actual rate is set by the natural rate.

If Gw < Gn, secular inflation will develop in the economy. In such a situation, Gw is also less than G for most of the time as the one shown in Panel-(B) of the above diagram.

The instability in Harrod's model is due to the rigidity of its basic assumptions such a fixed production function, a fixed saving ratio, and a fixed growth rate of labor force. The policy implications of the model are that saving is a virtue in any inflationary gap economy and vice in a deflationary gap economy. Thus, in an advanced economy, s has to be moved up or down as the situation demands.

The Domar Model:

A Russian American economist, Evsey David Domar (April 16, 1914 – April 1, 1997), builds his model from both demand as well as the supply side based on dual effect of investment and provided the solution for steady growth.

To simplify the model, the demand and the supply equation in the incremental form can be written as follows:

The demand side of the long-term effect of investment can be summarized and expressed through the following relation as:

$\Delta Y_d = \Delta I\ (1/\alpha)$ [Change in income (ΔY_d) equals multiplier ($1/\alpha$) times the Change in investment (ΔI)]

Or $\Delta Yd = \frac{\Delta I}{\alpha}$ (1)

Where;

α (Alpha) = Marginal propensity to save which is reciprocal of multiplier.

The supply size of investment can be summarized and expressed through the following relation as:

$\Delta Ys = \sigma \Delta K$ [Change in output supply (ΔY_s) equals the product of Change in real capital (ΔK) and capital Productivity (σ)]

Or $\Delta Y_s = \sigma I$…….(2) [Since $\Delta K=I$ where I denotes Net investment]

Equilibrium for Steady Growth:

For achieving steady growth, aggregate demand and aggregate supply must be balanced as expressed below:

$\Delta Y_d = \Delta Y_s$ (3)

By substituting the value of ΔY_d and ΔY_s from equations (1) and (2) respectively in we get: equation (3),

$\frac{\Delta I}{\alpha} = \sigma I$

Or $\Delta I = \alpha\sigma I$……(4) [By Cross multiplying]

Dividing both sides of equation (4) by I, we get;

$\frac{\Delta I}{I} = \alpha\sigma$

Or $\Delta Y = \alpha\sigma$……(5) [*Since by assumption of the model* $\Delta I = \Delta Y$]

Y I Y

The last Equation(5) explains that if steady growth is to be maintained, the income growth rate ($\Delta Y/Y$) should be equal to the product of marginal propensity to save (α) and the productivity of capital (σ)(sigma).

Domar's condition of steady state growth can be explained with the help of numerical example. Suppose the productivity of capital (σ) is 25% and the marginal propensity to save ((α) is12%, then;

$\Delta Y = 25 \times 12 = 3$ *or* 3%

Y 100 100 100

Or $\frac{\Delta I}{I} = 25 \times \frac{12}{100} = \frac{3}{100}$ *or* 3%

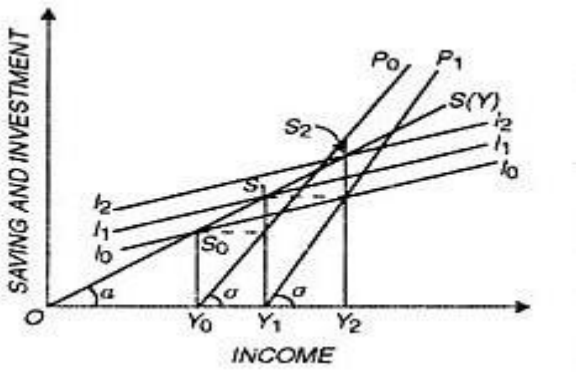
Thus, the above numerical example shows that income and investment must grow at an annual rate of 3% if steady growth rate is to be maintained at full-employment. Any divergence from this 'golden path' will lead to cyclical fluctuations. Disequilibrium reflecting non-steady growth state would prevail if:

1) $\frac{\Delta I}{I} > \alpha\sigma$ and the economy would experience inflation.

2) $\frac{\Delta I}{I} < \alpha\sigma$ and the economy would suffer from secular stagnation.

Diagram Representation of Domar Model:

Domar Model can also be explained with the help of the following diagram as below:



As shown in the above figure, the line S(Y) passing through the origin indicates the level of saving corresponding to different levels of income. I0I0, I1I1 and I2I2 are the various levels of

investment. Y0P0 and Y1P1 measure the productivity of capital corresponding to different levels of investment. The lines Y0P0 and Y1P1 are drawn parallel so as to show that productivity of capital remains unchanged. The level of income Y0 is determined by the intersection of saving line S(Y) and the investment line I0I0. At the level of income Y0, the saving is Y0S0. When the saving Y0S0 is invested, it will increase the income level from OY0 to OY1. The productive capacity will also rise correspondingly. The extent of the income increase depends upon the productivity of capital, which is measured by the slope of the line Y0P0 (α). Higher is the level of income higher the productive capacity. Similarly, when the level of income is OY1 the level of saving is S1Y1. With investment of S1Y1 income will further rise to the level Y2. This increase in income means expansion of purchasing power of the economy.

COMPARISON OF HARROD MODEL AND DOMAR MODEL

Similarities:

(i) The models are based on similar assumptions. It is for this reason that the names of Harrod and Domar are clubbed in any discussion of growth models.

(ii) Both the models employ Keynesian saving-investment equality as a condition for steady growth.

(iii) Both these models stress the "Knife-edge equilibrium".

(iv) Both the models have been built in the context of advanced economies where capital is found in abundance.

(v) As against Keynes' macro-static theory, Harrod and Domar hold that a dynamic approach to growth should be introduced in the long run.

Dis*similarities:*

(1) Domar assigns a key role to investment in the process of growth while Harrod regards the level of income as the most important factor in the growth process.

(2) Domar forges a link between demand and supply of investment while Harrod equates demand and supply of saving.

(3) The Domar model is based on one growth rate αϭ. But Harrod uses three distinct rates of growth: the
actual rate (G), the warranted rate (Gw) and the natural rate (Gn).

(4) Domar gives expression to the multiplier but Harrod uses the accelerator about which Domar appears to say nothing.

(5) Domar's assumption that $\Delta I/I = \Delta Y/Y$. But Harrod does not make such assumptions.

TOPIC:Solow Growth Model: Definition, Purpose and Examples

he Solow growth model is an economic model that analyzes a country's output compared to a country's input, which includes its population growth, savings, investments, capital, depreciation and technological advancements. The Solow model focuses on the long-term growth of an economy and shows how depreciation and investment eventually reach a steady state as technology advances, meaning it determines a country's ratio of capital to its labor. If you're interested in economics, learning how the Solow growth model works can be beneficial in understanding a country's growth rate.In this article, we explain what the Solow growth model is, detail its purpose, show the four steps you can follow to solve it and provide examples.

What is the Solow growth model?

The Solow growth model is a model that measures a nation's economic growth rate over a period of time to indicate the direction of its economy. This economic growth model considers the input of a nation's population, savings and advances in technology, compared to the production of output identifying the cost of each unit produced.The Solow model uses these principles, showing that over time, the gross domestic product (GDP) increases through economic fluctuations due to technological progress. The reason technological progress is an important part of the nation's input is that these advancements increase production and the efficiency of the labor force.

Factors of the Solow growth model

Capital and growth

The Solow growth model says that a full labor force and a rise in capital accumulation increase the economic growth rate. Due to diminishing returns, that growth rate is temporary. For example, if a country has one employee and adds a second employee, output increases significantly. Compared to an economy with thousands of employees, adding one shows no increase in output. The economy then grows at a steady rate, with GDP growing at the same rate as labor and productivity.

Technology

With a steady state and depleted resources, the economic growth rate only increases with technological improvements and innovations. For example, the introduction of new mobile devices or computers into the market can drive investments. The key to understanding the Solow method is understanding the steady state, which is when investment is equal to depreciation.

What is the Solow growth model graph?

The Solow line graph illustrates the concept of this model. The graph has an x-axis and a y-axis and produces three lines. One measurement line represents depreciation, one represents savings or investments and another represents the output per laborer or individual within the labor force. The country's steady state is where the lines converge. To function correctly, the model makes the following assumptions about the assessed economy:

- In closed economies, capital sees diminishing returns.
- When labor maintains production, accumulated capital decreases.

- The economy likely slows and achieves a steady state.
- Labor becomes more efficient as technology advances.
- Households have a consistent disposable income.
- Markets within the economy or nation are competitive.
- Population and employment rates stay the same.

What's the purpose of the Solow growth model?

The purpose of the Solow growth method is to measure the economic health of a country on a quarterly basis. If the Solow formula shows a positive growth rate, it's good for the country. Alternatively, with a negative growth rate in two consecutive quarters, the country is in a recession. For example, if you compare a country's growth last year to this year and it's 2% less, the population experiences a 2% reduction in income. Economists use the Solow growth model to:

- **Understand technological advances and economic growth:** By measuring and solving for each aspect of the Solow growth model, economists can understand how each variable affects others.

- **Explain economic growth and standard of living in a nation:** This model shows economic growth and the differences between standard of living and total income in different economies.

- **Represent an economical growth theory on a graph:** The Solow growth model is one theory about how the economy functions, and when economists graph the values, they can visually represent how depreciation and capital function in the model.

- **Act as a starting point:** The Solow growth model is the starting point for analyses in many modern economic theories. It represents the first time economists could analyze the role that labor, technology and capital play in the growth of an economy.

- **Explain market competition:** The results of the Solow model help identify a country's economic position so it can better understand where to put its focus to increase its self-dependence.

Key symbols in the Solow growth model

Here are some key statistical symbols that are helpful to know when using this model:

- **Y:** Represents production volume per employed employee

- **A:** Represents constant value, which means the increase in labor productivity caused by changes in technology

- **K:** Represents tangible capital per individual employee

- **D:** The difference between paired data

- **S:** Represents sample standard deviation and is a population samples standard deviation estimator

- **L:** Available supply of labor

- **st:** Means standard deviation

How to solve the Solow growth model

When solving the Solow growth model, you solve the equation for the variable k. The variable k represents the capital-labor ratio. Once you have the capital-labor ratio, you may use it to determine other figures, like the steady state consumption level or steady state investment level. You can follow these steps to solve the Solow growth model:

1. Determine the depreciation, population growth and savings rates

The first step to solving the Solow growth model is determining the figures you're using. This includes the depreciation, population growth and savings rates. For example, your depreciation rate may be 16%, population growth 11% and savings rate 26%. This is how you can represent these figures using symbols:*d = 0.16n = 0.11st = 0.27yt*

2. Find the per-laborer production rate

Next, you can find the per-laborer production rate. To determine a country's labor productivity, divide its total output by the total hours of labor. If you're solving from a workbook or other educational resource, the per laborer production is likely supplied. For example, you may use a formula like this:*yt = 5kt x 0.5*

3. Write out the equation for the Solow growth model and inputs

After determining your values, you can write the equation and input the figures. The exact equation you use for solving the model can vary. For example, you might remove subscripts if the economy is in a steady state. The equation may look like this:*0.27 x 5k0.5 = (0.11 + 0.16)k*

4. Follow mathematical steps to solve the equation for the variable k

After determining writing the equation and adding the inputs, you can follow algebraic steps to solve for the k variable. This involves adding the figures within parentheses, removing equal values from each side of the equals sign and completing the remaining division, subtraction and multiplication. After completing these calculations, the answer might look like this:*k =*

Solow growth model examples

These are some examples of solved Solow growth models:

Manufacturing company example

Consider a manufacturing company that wants to find its capital-labor ratio to plan its next budget. It has a 14% depreciation rate and a 23% savings rate. If the population growth is 9% and the pre-laborer production rate is 2k0.5, the company can use the following formula: 0.23 x 2k0.5 = (0.9+0.14)kAfter solving for k, the capital-labor ratio is 4.

Roofing company example

A roofing company realizes the depreciation rate of its materials is 17%, while the business experiences 13% population growth. If the per-laborer production rate is 3k0.5 and the savings rate is 30%, the company's capital-labor ratio is 9, based on the following formula:0.3 x 3k0.5 = (0.13+0.17)k

Human Capital on Economic Growth

Human capital and economic growth are related to each other. Human capital influences economic growth and it can generate an economy through knowledge and abilities.

Meaning of Human Capital

Human capital refers to the stock of skill, ability, expertise, education, and knowledge in a nation at a point of time. We need investment in human capital to produce more human capital out of human resources.

Nations require adequate human capital who are educated and qualified as educators and other specialists. In other words, we need great human capital to create other human capital like doctors, engineers, professors, etc., which will later become a human asset and contribute to the economy of the country.

Human Capital and Economic Growth

When we talk about economic growth, human capital is the main reason for the accelerated growth and expansion for many countries that provide investment in human capital. This gives the best advantages to these countries for providing the best situations for work and lifestyles.

A significant advantage in generating a stable environment for growth is that the nation has the expanded high-quality human capital in fields like health, science, management, education, and other fields. Here, the main components of human capital are definitely human beings, but presently, the principal component is a creative, educated, and enterprising person with a high level of professionalism.

Human capital in the economy manages the central portion of the national wealth. Hence, all researchers consider that human capital is the most important resource of the community, which is more powerful than nature or wealth. In most countries, human capital determines the rate of development, economic, technological, and scientific progress.

(i) Inventions, innovations, and technological improvement

1. Human capital leads to more innovations in the areas of production and other related activities.
2. Innovation leads to more growth.
3. Human capital also creates the ability to absorb new technologies.

(ii) Higher productivity of physical capital

1. Human capital increases labour productivity.

2. Trained workers will use the physical capital (like machines) more efficiently.

(iii) Raises production

1. The formation of human capital raises production levels and leads to economic growth by adding to the GDP.
2. Knowledgeable and skilled workers can make better use of resources at their disposal.

(iv) High rate of participation and equality

1. By improving the productive measures of the labour force, the formation of human capital increases excellent employment.
2. This leads to a high rate of participation in the labour force.
3. It reduces the gap between the poor

about only by a just and appropriate distribution of income. In other words, growth rate and income distribution are inherently connected elements. Kaldor's model depends on these two elements and their relationships and brings forth the importance of distribution of income in the process of growth— this is one of the basic merits of Kaldor's model.

In his model, on the one hand, the relations of distribution of income determine the given level of saving (or social saving) and, therefore, investment and economic growth rate. On the other hand, the achievement of this or definite growth rate requires a given level of investment and, therefore, of saving and hence, a corresponding distribution of income

Rostow's Stages of Economic Growth | Economics

: Rostow, an eminent economic historian, has described the historical process of transition from underdevelopment to development in terms of a series of five stages of growth through which all countries must pass to reach the ultimate destination of a developed country'.

These five stages of growth are:

1. The traditional society,
2. Preconditions for take-off,:
3. The take-off period,
4. The drive to maturity, and
5. Stage of mass consumption.

Stage # 1. Traditional Society:

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This initial stage of traditional society signifies a primitive society having no access to modern science and technology. In other words, it is a society based on primitive technology and primitive attitude towards the physical world. Thus, Rostow defines a traditional society "as one whose structure is developed within the limited production function based on pre-Newtonian science and technology and as pre-Newtonian attitudes towards the physical world"

However, Rostow does not view this traditional society as being completely static. In this stage of a society output could be increasing through the expansion of land area under cultivation or through the discovery and spread of a new crop. But the critical fact about this type of society is that there is limit to attainable output per head. This limit arises due to the absence of access to modern science and technology.

This type of a society allocates a large proportion of its resources to agriculture and is characterised by a hierarchical social structure in which there is little possibility for vertical mobility. The value system that prevails in such a society is what Rostow calls a long-run

fatalism. People of these societies think that not much economic progress is possible for them and for their future generations.

Stage # 2. Preconditions or the Preparatory Stage:

This covers a long period of a century or more during which the preconditions for take-off are established. These conditions mainly comprise fundamental changes in the social, political and economic fields.

For example:

(a) A change in society's attitudes towards science, risk-taking and profit-earning;
(b) The adaptability of the labour force;
(c) Political sovereignty;
(d) Development of a centralised tax system and financial institutions; and
(e) The construction of certain economic and social infrastructure like railways, ports, power generation and educational institutions. India did some of these things in the First Five Year plan Period (1951 -56).

It is evident from above that in this second stage of growth foundations for economic transformation are laid. The people start using modern science and technology for increasing productivity in both agriculture and industry. Further, there is a change in the attitude of the people who start viewing the world where there are possibilities of future growth. A new class of entrepreneurs emerges in the society who mobilise savings and undertake investment in new enterprises and bear risks and uncertainty. In the sphere of political organisation, it is during this stage that an effective centralised nation state starts emerging.

Thus in the stage of precondition for take-off Rostow views agriculture as performing three roles; first, agriculture must produce sufficient food grains to meet the demand of growing population and of the workers who get employment in agriculture. Secondly, increase in agricultural incomes would lead to the demand for industrial products and stimulate industrial investment. Thirdly, expanding agriculture must provide much of the savings needed for the expansion of the industrial sector.

Stage # 3. The "Take-Off' Stage:

This is the crucial stage which covers a relatively brief period of two to three decades in which the economy transforms itself in such a way that economic growth subsequently takes place more or less automatically. "The take-off stage" is defined as "the interval during which the rate of investment increases in such a way that real output per capita rises and this initial increase carries with it radical changes in the techniques of production and the disposition of income flows which perpetuate the new scale of investment and perpetuate thereby the rising trend in per capita output."

Thus, the term "take-off" implies three things – first, the proportion of investment to national income must rise from 5% to 12% and more so as to outstrip the likely population growth; secondly, the period must be relatively short so that it should show the characteristics of an economic revolution; and thirdly, it must culminate in self-sustaining and self-generating economic growth.

Thus, during the take-off stage, the desire to achieve economic growth to raise the living standards dominates the society. Revolutionary changes occur in both agriculture and industry and productivity levels sharply increase. There is greater urbanisation and urban labour force increases. In a relatively short period of a decade or two, both the basic structure of the economy and social and political structure is changed so that a self-sustaining growth rate can be maintained.

It is worth noting that, in the opinion of Rostow, the rise of new elite (i.e., new entrepreneurial class) and establishment of a nation state are crucial for economic development.

Stage # 4. Drive to Maturity – Period of Self-Sustained Growth:

This stage of economic growth occurs when the economy becomes mature and is capable of generating self-sustained growth. The rates of saving and investment are of such a magnitude that economic development becomes automatic. Overall capital per head increases as the economy matures. The structure of the economy changes increasingly.

The initial key industries which sparked the take-off decelerate as diminishing returns set in. But the average rate of growth is maintained by a succession of new rapidly-growing sectors with a new set of leading sectors. The proportion of the population engaged in agriculture and other rural pursuit's declines, and the structure of the country's foreign trade undergoes a radical change.

It is with both the problems and the cyclical movements of national income in such mature growing economies in this fourth stage that the bulk of modern theoretical economics is concerned. The students of contemporary developing countries and also of economic history are more likely to be concerned with the economics of the previous two stages, that is, the economics of the preparatory and the "take-off" stages. If we are to have a useful and adequate theory of economic growth, it must obviously be comprehensive enough to embrace these two stages as well, especially the economics of the "take-off into self-sustaining growth".

Stage # 5. Mass Consumption:

In this stage of development per capita income of a country rises to such a high level that consumption basket of the people increases beyond food, clothing and shelters to articles of comforts and luxuries on a mass scale. Further, with progressive industrialisation and urbanization of the economy values of people change in favour of more consumption of luxuries and high styles of living. New types of industries producing durable consumer goods come into existences which satisfy the wants for more consumption. These new industries producing durable consumer goods become the new leading sectors of economic growth.

A Critique of Rostow's Stages of Growth:

Rostow's stages of growth theory have come in for severe criticism. Gunar Mydral has argued that there cannot be an inevitable sequence of events described as successive stages of growth. According to him, economic growth is the result of certain economic policies adopted and not the other way round. Likewise, Meier argues that stages in the history of economic growth cannot be generalised from the development experience of some European countries as Rostow has done.

To quote Meier, "Stage-making approaches are misleading when they consider a linear conception of history and imply that all economies tend to pass through the same series of stages. Although a particular sequence may correspond broadly to the historical experience of some economies, no single sequence fits the history of all countries. To maintain that every economy always follows the same course of development with a common past and the same future is to over-schematize the complex forces of development and to give the sequence of stages a generality that is unwarranted".

UNIT-IV

Sectors of the Indian Economy

There are three main sectors in the Indian economy, i.e., primary, secondary and tertiary or service sectors. These sectors cater to different classes of people in the economy depending upon the nature of their activities. Here, we will focus on the agriculture and industry sectors.

- **Primary Sector**

The primary sector is also known as the agriculture sector and is mainly dependent on the availability of natural resources. Activities such as fisheries and forestry also come under this sector. This sector provides input or raw material for the secondary sector.

- **Secondary Sector**

The secondary sector, often termed the manufacturing sector, is mainly dependent on the natural ingredients procured from the primary sector to create the goods. They consume the produce of primary sectors and create the final product for the end-user consumption. In terms of value added to the products or services, this sector is considered the best sector. Activities such as manufacturing and transportation fall under this category and are the backbone of the Indian economy.

If we analyse the decision today and consider the available resource base at that time, it seems illogical to choose industry as their prime mover at that time. The economy lacked prerequisites required for the industry as there were:

1. Almost no infrastructure for transportation, power and communication.
2. No infrastructure industries, such as cement, steel and iron, crude oil, coal, electricity and oil refining.
3. Absence of investible capital in private and government sectors.
4. Lack of technologies to support industrialisation, and hardly any investments were made in research and development.
5. Lack of manpower having the desired skills.
6. Lack of entrepreneurship skills in people.
7. No market for selling industrial goods.

Big Push Theory of Economic Development | Economics

The theory of 'big push' first put forward by P.N. Rosenstein-Rodan is actually a stringent variant of the theory of 'balanced growth'. The crux of this theory is that the obstacles of development are formidable and pervasive. The development process by its very nature is not a smooth and uninterrupted process. It involves a series of discontinuous 'jumps'. The factors affecting economic growth, though functionally related with each other, are marked by a number of "discontinuities" and "hump."

Therefore, any strategy of economic development that relies basically upon the philosophy of economic "gradualism" is bound to be frustrated. What is needed is a "big push" to undo the initial inertia of the stagnant economy. It is only then that a smooth journey of the economy towards higher levels of productivity and income can be ensured.

Unless big initial momentum is imparted to the economy, it would fail to achieve a self-generating and cumulative growth. A certain minimum of initial speed is essential if at all the race is to be run. A big thrust of a certain minimum size is needed in order to overcome the various discontinuities and indivisibilities in the economy and offset the diseconomies of scale that may arise once development begins.

According to Rosenstein-Rodan, marginal increments in investment in unrelated individual spots of the economy would be like sprinkling here and there a few drops of water in a desert. Sizable lump of investment injected all at once can alone make a difference.

Rationale for the Big Push:
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The basic rationale of the 'Big Push' like the 'Balanced Growth' theory is based upon the idea of 'external economies'. In the theory of welfare economics, external economies are defined as those unpaid benefits which go to third parties. The private costs and prices of products fail to reflect these. And the market prices have to be corrected if an account of these external economies is to be taken. However, the concept of external economies has a different connotation in growth theory. Here, they are pecuniary in nature and get transmitted through the price system.

To explain the emergence of such external economies and their transmission, let us consider two industries A and B. If the industry A expands in order to overcome the technical indivisibilities, it shall derive certain internal economies. This may result in the lowering of the price for the product of the industry A. Now if the industry B uses A's output as an input, the benefits of A's internal economies shall then be passed on to the industry B in the form of pecuniary external economies. Thus, "the profits of industry B created by the lower prices of product. A call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This in turn will give rise to profits and call for further investment and expansion of industry A."

Following such a line of argument, Prof. Rosenstein-Rodan contends that the importance of external economies is one of the chief points of difference between the static theory and a theory of growth. "In the static allocative theory there is no such importance of the external economies. In the theory of growth however," remarks Prof. Rodan, "external economies abound because given the inherent imperfection of the investment market, imperfect knowledge and risks, pecuniary and technological external economies have a similarly disturbing effect on the path towards equilibrium."

Now, the basic contention of the "big push" theory is that such a mutually beneficial way of output expansions is not likely to occur unless the initial obstacles are overcome. There are "non- appropriabilities" or "indivisibilities" of different kinds which if not removed through a "big push" will not permit the emergence and transmission of 'external economies' – which lie at the back of a self-generating development process.

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Associated with the removal of each set of indivisibilities is a stream of external economies. A 'bit by bit' approach to development would not enable the economy to cross over certain indivisible economic obstacles to development. What is required is a vigorous effort to jump over these obstacles. As such, for the economy to be successfully launched on the path of self-generating growth a "big push" in the form of a minimum size of investment programme is necessary. In essence, therefore, an all-or-nothing approach to development is stressed in big-push approach to development.

Requirements for Big Push:

The hallmark of the 'big-push' approach lies in the reaping of external economies through the simultaneous installation of a host of technically interdependent industries. But before that could become possible, we have to overcome the economic indivisibilities by moving forward by a certain "minimum indivisible step". This can be realised through the injection of an initial big dose of a certain size of investment.

Prof. Rodan distinguishes three kinds of indivisibilities and externalities with a view to specify the areas where big push needs to be applied.

They are:

:

(i) Indivisibilities in the production function, i.e., lumpiness of capital, especially in the creation of social overhead capital.

(ii) Indivisibility of demand, i.e., complementarity of demand.

(iii) Indivisibility of savings, i.e., kink in the supply of savings.

Let us study each of these individually so as to bring out their importance in providing a self- generating stimulus to the development process.

(i) Indivisibilities in the Production Function:

Prof. Rodan argues that it is possible to generate enormous pecuniary external economies by overcoming the 'indivisibilities of inputs, processes and outputs.' The emergence of such externalities would bring about a wide range of increasing returns. To corroborate his contention he cites the case of United States. He feels that the fall in the capital-output ratio in U.S.A. from 4:1 to 3:1 over the last eighty years was chiefly due to the increasing returns made possible by the levelling down of production indivisibilities.

The most important case of indivisibilities and external economies on the supply side resides in the social overhead capital which is now called infrastructure. The most important effect of jumping over this indivisibility is the "investment opportunities created in other industries". Social overhead capital consists of all the basic industries such as transport, power, communications, and such other public utilities.

The construction of these infrastructures involves 'lumpy' capital investments. And the capital- output ratio in the social overheads is considerably higher than in other industries. Moreover, these services are only indirectly productive and involve long gestation periods. Besides, their "minimum feasible size" is large enough. As such it is well-nigh difficult to avoid excess capacity in these, at least in the initial periods. Above all, there is a "minimum industry mix of public utilities" that must be required to divert at least 30 to 40 per cent of their total investment in the creation of social overhead capital.

In this view, therefore, it is possible to distinguish four types of indivisibilities of creating social overhead capital.

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They are:

(a) Indivisibility of Time:

The creation of social overhead capital must precede other directly productive industries so that it is irreversible or indivisible in time.

(b) Indivisibility of Durability:

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The infrastructures generally last long. The overhead capital with lesser durability is either technically not feasible or is very poor in efficiency.

(c) Indivisibility of Long Gestation Periods:

The investments in social overhead capital, by all counts, involve a highly protracted period of time for their fruition as compared with investments in other directly productive channels.

(d) Indivisibility of an Irreducible Industry Mix of Public Utilities:

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Social overhead capital must grow collectively. There is an irreducibly minimum industry mix of different public utilities that have to be created all at one stroke.

As it is impossible to import the infrastructures, they have got to be produced domestically. And because of the existence of above explained indivisibilities, it is necessary to make 'lumpy' investments in them. And their creation is a precondition to the investments in directly productive and other quick-yielding productive activities. Only then the way for a self-generating economy can be paved. Thus the absence of adequate social overhead capital constitutes the most important bottleneck in the development of developing countries.

(ii) Indivisibility of Demand:

This refers to the complementarity of demand arising from the diversity of human wants. The very fact that there is an indivisibility of complementarity of demand requires simultaneous setting up of interrelated industries in countries to initiate and accelerate the process of development.

Indivisibility of demand generates interdependencies in investment decisions. As such, if each investment project was undertaken independently, it is in most cases likely to flop down. This is because individual investment projects generally have "high risks because of uncertainty as to whether their products will find a market," This point can be clarified with the help of the following well known example given by Rosenstein-Rodan for a closed economy.

To start with, let us suppose that 100 disguisedly unemployed workers in an underdeveloped country were withdrawn and employed in a shoe factory. The wages of the newly employed workers would provide an additional income to them. Now, if they spend all their newly received purchasing power on the shoes, an adequate market for the shoe industry would be ensured. As a result, the industry would succeed and survive.

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But the fact is that human beings having diversity of wants cannot simply afford to survive simply by the consumption of shoes and nothing else. As such, they will not spend all their earnings on the purchase of shoes. The market for the shoe industry will, therefore, remain limited as before. Therefore, the incentives to invest will be adversely affected. As a result, the shoe factory investment project might end in a fiasco.

Now let us make a somewhat different assumption to see how an atmosphere congenial to the undertaking of investments can occur. Suppose that instead of only 100 workers being engaged in the shoe factory, 10,000 workers are put to work in 100 different factories producing a variety of consumer goods. These new factories provide larger employment and thus purchasing power to their workers. There is an increase in the total volume of purchasing power and the total size of the market. This is because the "new producers would be each other's customers".

In a way, what has happened is that due to the complementarity of demand, the risk of limitedness of market is greatly reduced. The result is that the incentives to invest are increased. "Thus provided that the total volume of employment and purchasing power is increased by a minimum indivisible step, each factory Will have enough market to reach full capacity production and the point of minimum cost per unit."

We, therefore, find that the indivisibility of demand requires the simultaneous production of a "bundle" of large number of wage goods on which the newly employed workers could spend their income. That alone would ensure adequate market for the product of each producer. In terms of investment the implication is that "unless there is assurance that the necessary complementary investments will occur, any single investment project may be considered too risky to be undertaken at all."

This, as Prof. Higgins remarks, results into indivisibility in the decision-making process. A large-scale investment programme based on complementarity of demand undertaken as a unit may bring forth large increases in national income. But each of the individual investment projects undertaken singly may not fructify at all.

The essence of the whole analysis is that a high minimum quantum of investment in interdependent industries is needed to overcome the indivisibility of demand and hence that of decision-making. That, according to the big push theory, is the only reliable way of overcoming the smallness of the market size and low inducement to invest in the developing economies.

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(iii) Indivisibility in the Supply of Savings:

A high minimum package of investment cannot be undertaken without an adequate supply of savings. But it is not possible to have such high volume of savings in underdeveloped countries due to an extremely low price and high income elasticities of the supply of savings. The savings are low primarily because incomes are low. This, thus, constitutes the third indivisibility. "The way out of the vicious circle," remarks Rosenstein-Rodan, "is to have first an increase in income and to provide mechanisms which assure that in every second stage the marginal rate of savings will be very much higher than the average rate of savings." The Smithian advice that 'frugality is a virtue and prodigality a vice' has to be adapted to a situation of growing income." But in the ultimate analysis the initial big increase in income has got to be provided through an initial big increase in investment.

The existence of the three indivisibilities outlined above make it abundantly clear that the solution to all these lies in a high minimum quantum of investment. Thus, a big push through a minimum indivisible step forward in the form of a high minimum quantity of investment could alone make it possible to jump over the economic obstacles to development in the underdeveloped countries.

Lastly, Resenstein-Rodan considers the role of international trade vis-a-vis the strategy of big push in generating a self-sustaining process of development. In this regard he is of the view that international trade cannot be a substitute for "big push." The provision of some of the needed wage goods through imports can at best help in narrowing down the range of fields which call for a 'big push'. The historical experience provided by the nineteenth century corroborates Rosenstein- Rodan's conclusion that international trade cannot by itself obviate the need for 'big push' altogether.

Once the process of development by an initial application of 'big push' is underway, its sequel course would tend to follow simultaneously three sets of balanced growth relations.

They are:

:

(i) A balance between the social overhead capital and the directly productive activities (in both the consumer and capital goods sectors).

(ii) A vertical balance between capital goods and consumer goods (including the intermediate goods).

(iii) Lastly, there should be the horizontal balance between various consumer goods industries due to complementary nature of expanding consumer demand.

The Need for Balanced Growth of Centralised Planning:

The mutual benefits arising from the external economies for industrialisation cannot be included in the cost calculations of entrepreneurs to the fullest possible extent without recourse to some sort of centralized 'balanced growth' planning. This is because of a number of reasons. First, due to the imperfections in the market, the free market price system does not adequately give proper signal to the private investors for the future possibilities of expansion in complementary industries.

Second, in developing countries due to the imperfections of knowledge and risks, the response of the private entrepreneurs to any given price signal is quite imperfect and unsatisfactory. Thus, due to the failure to take advantage of the external economies to the fullest extent, investments which may be profitable in terms of 'social marginal net product' remain unprofitable in terms of 'private marginal net product'. In this view, therefore, there is a need for an integrated investment scheme to be carried out in complementary industries. The best way to do that would be to carry out the investment programme under the direction of some centralised planning authority. An individual entrepreneur in a developing country cannot hope to have all the necessary data which the central planning authority can draw upon.

The crash programme of investment envisaged by the 'big-push' theory cannot by its very nature be made just at random. It has to take into consideration the various balances – horizontal as well as vertical. Only then could the achievement of self-generating, cumulative and harmonious growth of the economy is possible. For this what is necessary is a unified decision-making process. "Allocation of capital," remarks Prof. Higgins, "on the basis of individual estimates of short-run returns on various marginal investment projects is the very process by which the underdeveloped countries got where they are.

The basic reason for government action to promote development is that each of a set of individual private investment decisions may seem unattractive in itself, whereas a large scale investment program undertaken as a unit may yield substantial increase in national income." Prof. Rosenstein-Rodan's theory is essentially a theory of development and thus helps us to examine the path towards development rather than restricting itself simply to the study of conditions at the point of equilibrium. The theory highlights the inefficiency of price system of signalling the desirable directions for investment. It is big-push investment through a centralised planning that could put the developing countries on a self-generating development process.

Evaluation of Rosenstein's Big Push Strategy:

However, Prof. Rosenstein-Rodan's all-or-nothing approach is not perfect in itself in all respects. It suffers from a number of lacunae.

First, the main implication of the 'big-push' theory is State intervention and centralised planning. It is argued that due to imperfections of market the free price system fails to register and thus communicate properly the economic events, much less their future course. But the pertinent question involved here is – will the prevailing circumstances of the developing countries warrant a conclusion to the contrary? The actual fact of the matter is that the current institutional and administrative set-up of the government machinery of the poor developing countries is too weak to cope with the dictates of the 'big push' theory. It is, therefore, quite doubtful whether the government sponsored brand of communication system about the future events would at all be more effective than the free price mechanism.

The governments of developing countries may somehow manage to draw up their initial integrated economic plans. But they are bound to be faced with tremendous difficulties in the execution of these plans. In any comprehensive programme comprising a complex set of related projects, delays and continued revision of the original time-bound schedules are inevitable. "The greater the interdependence", remarks Prof. Myint, "between the different components of the plan, the greater the repercussions of an unexpected or an

unavoidable change in one part of the plan on the rest and the greater the need to keep the different parts of the plans continually revised in the light of the latest information available." These are indeed formidable hurdles for the developing countries to cross.

Besides, on account of the poor and incompetent institutional set-ups of the developing countries, there is bound to be insufficient knowledge about the local conditions and an "inefficient feedback of this vital local knowledge from different parts of the country to the central planning machinery." Mere improvement in the standard type of statistical information would not remedy all this.

Above all, the process of unified decision-making and coordination becomes all the more difficult in mixed economies like India. This is so because not often, the public and private sectors rather than being complementary are in fact competitive with each other. Thus, it may so happen that the "private enterprise is inhibited by uncertainties not only about the general economic situation but also about the future intention of the government regulations."

Thus, it is quite clear that the application of a 'big push' programme in the developing countries with their weak and incompetent institutional and administrative machinery is likely to die its own death. In fact, as Prof. Myint remarks, it can be compared to "an attempt to impose a complete and brand new 'second floor' on the weak and imperfectly developed one floor economy of these countries."

Secondly, the chief plank on which the 'big push' theory is founded is the emergence of a wide range of external economies. Prof. Viner has shown that international trade can provide much more external economies than does the domestic investments. However, the developing countries being primarily primary producing countries, engage a large part of their total investment for their exports and marginal import substitutes, the field where the external economies are found to be very- negligible.

Thirdly, the 'big push' theory concentrates mainly on the industrial sector – viz., capital goods, consumer goods and social overhead capital. The manufacturing sector is considered inherently to be a better vehicle of economic growth. But in the developing countries, the most dominant sector is composed of agricultural and primary production. For a balanced growth of the economy, agriculture also requires a corresponding 'big push'. Any neglect of the agricultural sector in these countries is bound to jeopardise the 'big push' effort.

Fourthly, the major part of the 'lumpy' investments involved in the 'all-or-nothing' approach is called for by the 'technical indivisibilities' embodied in the creation of social overhead capital. Not only is the quantum of investment enormously 'lumpy' but also the capital-output ratio high in the provision of social overhead services than in other directions. Thus, due to the inherent capital scarcity in the developing countries, it is really a matter of dubious wisdom to require these countries to overstrain their meagre resources in the provision of a complete outfit of infrastructures.

The 'big push' theory recommends a 'starting from scratch' concerted action in the creation of social overheads. This is on the implicit assumption that these services are totally non-existent in these economies. However, for most of these countries, remarks

Prof. Myint, "the practical question is not whether to have a completely new outfit of these services starting from scratch but how to extend and improve the existing facilities."

Further, the 'big push' theory by its very nature requires the 'lumpy' investments in different social overheads to be made simultaneously and once for all. With the very long gestation periods usually associated with such investments, there are bound to be inflationary pressures in the economy due to the shortage of consumption goods. In an inflationary atmosphere, the process of construction of the social overheads is bound to be a protracted one. In this light it would be better to spread the infrastructure-building activity over a period of time through phasing and changing the time dimension of the projects. This requires selection of a suitable economic size of the social overhead investments.

Balanced Growth Theory

The balanced growth theory can be explained with the views of:
(a) Rosenstein Rodan and
(b) Ragnar Nurkse and
(c) Lewis
:

(A) Views of Rosenstein Rodan:

In 1943 article, Rosenstein Rodan propounded this theory but without using the term balanced growth. He stated that the Social Marginal Product (SMP) of an investment is different from its Private Marginal Product (PMP). If different industries are planned accordingly to their SMP, the growth of the economy would be much more than it the industries had been planned according to their PMP. SMP is greater than PMP because of the complementarity of different industries which leads to the most profitable investment from the social point of view.

He illustrates it with a popular example to shoe factory. If a large shoe factory is started in the region where 20,000 unemployed workers are employed. Now in case, the workers spend their entire wages on shoes, it would create market for shoes. If series of industries are started, in that case the demand of different industries would increase via multiplier process. This would lead to planned industrialization. Ragnar Nurkse has also developed his thesis on these lines.

(B) Views of Ragnar Nurkse:
:

Prof. Nurkse has given a proper explanation of the theory of balanced growth. He holds that the major obstacle to the development of the underdeveloped countries is the vicious circle of poverty. This vicious circle of poverty shows that income in underdeveloped countries is low. Low income leads to low savings. Low savings will naturally result in low investment, which will result in less production. Low production will generate low income. Low income will create low demand for goods. In other words, it will result in smaller markets (limited extent

of markets). Thus, there will be no inducement to invest.

According to Nurkse "The inducement to invest may be low because of the small buying power of the people, which is due to their small real income, which again is due to low productivity. The low level of productivity however is a result of the small amount of capital used in production which in turn may be caused, at last partly, by inducement to invest." So, in order to break the vicious circle of poverty in the under-developed countries, it is essential to have a balance between demand and supply.

Ranger Nurkse is of the view that economic development is adversely affected by vicious circle of poverty. The economic development can take place only if vicious circle of poverty is broken. The vicious circle of poverty operates both on the demand and supply side.

(a) Demand Side:

:

Vicious circle of poverty affects the demand side of capital formation. The underdeveloped countries are poor because their level of income is low. Due to low level of income, their demand for low income goods is low.

Vicious circle of poverty: On Demand Side:

In UDCs the size of the market is limited. As a result, private investors do not get opportunities for more investment. This reduces investment and capita. Hence productivity of capital would fall.

This reduced per capita income as explained as follows:

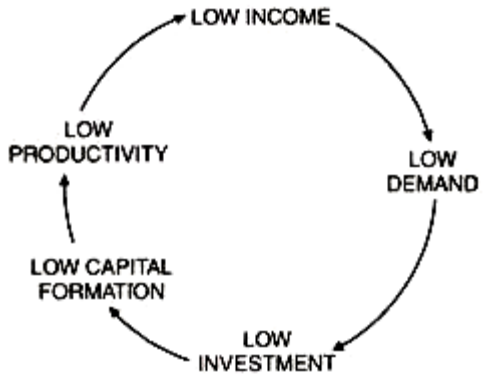

Fig. 1

Low Income → Low Size of Market → Low Investment → Low Productivity → Low Income.

(b) Supply Side:

Vicious circle of poverty affects the supply side of capital formation. In the underdeveloped countries, poverty exists because the per capita income of the people is low. Due to low per capita income, the level of saving is low. Since investment depends on savings, so investment would be low due to which capital formation would be low. Low capital formation would lead to low productivity which would result in poverty. This is how vicious circle from supply side completes.

Low-Income → Low Savings → Low Investment → Low Capital → Formation → Low Productivity → Low Income

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Vicious Circle of Poverty: Supply Side:

The underdeveloped countries, can resort to capital formation and accelerate the pace of economic development only by breaking the vicious circle of poverty. Once the vicious circle of poverty is broken, the economy would be on the rails to development. Now the question is how to break the vicious circle of poverty.

How to Break Vicious Circle of Poverty?

(i) Complementary Demand:

:

The vicious circle of poverty cannot be broken with industrial investment decisions. This means vicious circle of poverty cannot be broken only by making investment in one industry or one sector. Rather, there should be overall investment in all the sectors. This is the only way to enlarge the size of the market. In order to clear his views, Nurkse has given example of shoe industry as given by Rosenstein Rodan.

It testifies that investment in shoe industry will not lead to sufficient demand. What we need is to have overall investment, so that labourers of one industry can be the consumers or buyers of the products of others. In the words of Nurkse, "The solution seems to be balanced pattern of investment in a number of different industries so that people working with more productivity, with more capital and improved techniques become each other's customers."

When investment will be made in several industries simultaneously, it will increase the income of many people who are employed in various industries. They will purchase goods made by each other for consumption. They will become customers mutually. Thus, with the increase in supply demand will also go up. The extent of market will also increase. It will lead to capital formation and thus, the vicious circle of poverty will get broken. Same would be the case of wage-earners of different industries or sectors.

The complementarity of industries is in reality, the crux of the concept of balanced growth. This is termed as complementarities of demand. According to Nurkse, "Most industries entering for mass consumption are complementary in the sense that they provide a market for and thus supports each other, the basic complementarity stems, in the last analysis from the diversity of human wants. The case for balanced growth rests on the need for a balanced diet." Thus, on the basis of the complementaries of demand, balanced growth will be helpful in attaining economic progress.

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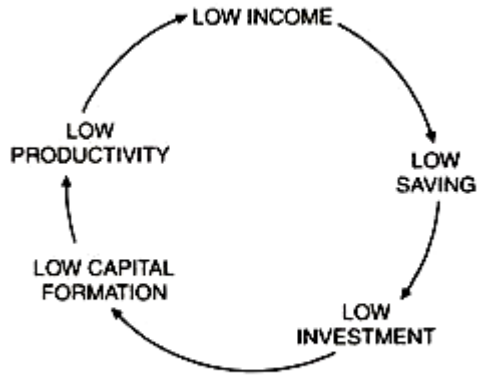

Fig. 1.1

(ii) Government Intervention:

Nurkse is of the view that the government must intervene in productive activities through economic planning. He is of the view that when government participates in productive activities, it will help in breaking the vicious circle of poverty. Nurkse opines that if entrepreneurs are available in underdeveloped countries, then they can be induced to make investment. But in underdeveloped countries, private entrepreneurs cannot come forward with so much heavy investment. This can easily be carried by the government only. Thus, vicious circle of poverty can be broken only by the intervention of the government.

(iii) External Economies:

Balanced growth also leads to external economies. External economies are those which accrue because of the setting up of new industries and expansion of the existing industries.

The accruing of external economies lead to the law of increasing returns to scale. It leads to a fall in the cost of production and hence the price level. A fall in the price leads to the increase in demand which is useful for economic development.

(iv) Economic Growth:

:

Balanced growth helps in accelerating the pace of economic growth, G.M.Meier is of the view that "Balanced Growth is a means of getting out of rut". Nurkse is of the view that increase in investment in different branches of production can enlarge the total market. This can break the bonds of the stationery equilibrium of underdevelopment.

How the Market can be enlarged:

The market size can be enlarged by monetary expansion, salesmanship and advertisement, removing trade restrictions and expanding social other heads i.e., infrastructures. It can be widened either by a reduction in prices or by an increase in money while keeping constant prices. As the circumstances are found, market is not large enough to allow production on such a scale to reduce cost in underdeveloped countries. The solution pointed out for this critical position by Prof. Nurkse, is "More or less synchronized application of capital to a wide range of different industries.

Here is an escape from the deadlock, that is it results in an overall enlargement of the market. People working with more and better tools in a number of complementary projects become each other's consumer. More industries catering for mass consumption are complementary in the sense that they provide a market for and support each other. The case for balanced growth sets on the need for a balanced diet."

Nurkse further submits his notion of balanced growth from Say's law which states that "Supply creates its own Demand" and Mill cites that "Every increase of production, if distributed without miscalculation among all kinds of produce in the proportion which private interest would dictate, creates or rather constitutes its own demand." Thus, Nurkse's, balanced growth is a sort of frontal attack—"a wave of capital investment in a number of different industries." Therefore, the best way is to have simultaneous wave of new plants composed in such a way that full advantage is taken of complementaries on the supply side and of the complementaries of the markets on the demand side." Investment is wide range of industries will give better division of labour, it leads to vertical and horizontal integration of industries, a common source of raw-materials and technical skill, an expansion of the size of the market and better use of social and economic overhead capital.

Therefore, investment in productive equipment and in human capital should be simultaneous while investment will be fruitless unless people are educated. But Prof. Nurkse pleads that private enterprise can achieve the desire effect under the stimulus of certain incentives. Price incentives may bring about balanced growth to some extent. It is further promoted by monetary and other effects.

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(C) W.A. Lewis Views on the Theory of Balanced Growth:

W.A. Lewis has advocated the theory of balanced growth on the basis of the following two reasons:

Firstly, in the absence of balanced growth, prices in one sector may be higher than the prices in the other sector. On account of unfavourable terms of trade in the domestic market, they might suffer heavy losses. As a result no investment will be made there in and their growth will be halted. Because of balanced growth equality in comparative prices in all the sectors will be made and thereby all the sectors will continue to grow.

Secondly, when the economy grows, then several bottlenecks appear in different sectors. As a result of economic development, income of the people also increases. Due to increase in income, demand of those goods rises whose demand is income-elastic. If the production of

these goods does not increase, there may appear several bottlenecks. However, in case of balanced growth, it is possible to increase production of those goods whose income elasticity of demand is more. Thereby, chances of bottlenecks in different sectors will be quite remote.
In case it is not possible to increase production simultaneously in agricultural and industrial sectors, then Prof. Lewis suggested that the strategy of balance between domestic and foreign trade should be adopted. If industrial sector is not developing, then the agricultural produce should be exported and industrial products should be imported. On the other hand if agricultural sector is not developing, then the industrial goods should be exported and agricultural products should be imported.
However, Lewis does not favour a strategy for growth which totally dependent on increase exports. In his opinion, such a policy may turn the terms of trade against the country which pursues it. According to Lewis, "All sectors of the economy should be developed simultaneously so that balance is maintained between industries and agriculture, production for domestic consumption and production for exports"

Unbalanced Growth Theory

According to Hirschman, "Development is a chain of disequilibria that must be kept alive rather than eliminate the disequilibrium of which profits and losses are symptoms in a competitive economy.
If economy is to keep moving ahead, the task of development policy is to maintain, tension, disproportions and disequilibria."
"Unbalanced growth is a better development strategy to concentrate available resources on types of investment, which help to make the economic system more elastic, more capable of expansion under the stimulus of expanded market and expanding demand"-H.W.Singer.
According to Alak Ghosh,
"Planning with unbalanced growth emphasizes the fact that during the planning period investment will grow at a higher rate than income and income at a higher rate than consumption."
It explains the unbalanced growth in terms of the growth rates of investment, income and consumption. If $\Delta I/I$, $\Delta Y/Y$ and $\Delta C/C$ denote the rate of investment, income and consumption, then unbalanced growth implies

$\Delta I/I > \Delta Y/Y > \Delta C/C$
i.e., the growth rates are not uniform.
According to Benjamin Higgin, "Deliberate unbalancing of the economy, in accordance with a pre-designed strategy is the best way to achieve the economic growth."
According to H.W.Singer, "Unbalanced growth is a better development strategy to concentrate available resources on types of investment, which help to make the economic system more elastic, more capable of expansion under the stimulus of expanded market and expanding demand."

Meier and Baldwin are also of the opinion that "Planners should concentrate on certain focal points, so as to achieve the goal of rapid economic development. The priorities should be given to those projects which ensure external economies to the existing firms, and those

which could create demand for supplementary goods and services."

Explanation of the Theory:

Albert O. Hirschman in his strategy of economic development goes a step further from Singer when he says that for accelerating the pace of economic development in the underdeveloped countries, it is advisable to create imbalances deliberately. He also recognized the inter-relatedness of different economic activities as done by Ragnar Nurkse. But he asserts that investment in selected industries or sectors would accelerate the pace of economic development.

He regarded, "Development is a chain disequilibria that must keep alive rather than eliminate the disequilibria, of which profits and losses are symptoms in a competitive economy". There would be 'seasaw advancement' as we move from one disequilibrium to another new disequilibrium situation.

Thus Hirschman argued that, "To create deliberate imbalances in the economy, according to a pre-designed strategy, is the best way to accelerate economic development." Hirschman is of the confirmed view that underdeveloped countries should not develop all the sectors simultaneously rather one or two strategic sectors or industries should be developed by making huge investment. In other words, capital goods industries should be preferred over consumer goods industries.

It is because capital goods industries accelerate the development of the economy, where development of consumer goods industries is the natural outcome. Hirschman has stated that, "If the economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions and disequilibria."

Process of Unbalanced Growth:

The strategy of unbalanced growth is most suitable in breaking the vicious circle of poverty in underdeveloped countries. The poor countries are in a state of equilibrium at a low level of income. Production, consumption, saving and investment are so adjusted to each other at an extremely low level that the state of equilibrium itself becomes an obstacle to growth. The only strategy of economic development in such a country is to break this low level equilibrium by deliberately planned unbalanced growth.

Prof. Hirschman is of the opinion that shortages created by unbalanced growth offer considerable incentives for inventions and innovations. Imbalances give incentive for intense economic activity and push economic progress.

According to Prof. Hirschman, the series of investment can be classified into two parts:

1. Convergent Series of Investment:

It implies the sequence of creation and appropriation of external economies. Therefore, investment made on the projects which appropriate more economies than they create is called convergent series of investment.

2. Divergent Series of Investment:

It refers to the projects which appropriate less economies than they create.

These two series of investment are greatly influenced by particular motives. For instance, convergent series of investments are influenced by profit motive which are undertaken by the private entrepreneurs. The later is influenced by the objective of social desirability and such investment are undertaken by the public agencies.

In the words of Prof. Hirschman, "When one disequilibrium calls forth a development move which in turn leads to a similar disequilibrium and so on and infinitum in the situation private profitability and social desirability are likely to coincide, not because of external economies, but because input and output of external economies are same for each successive venture." Thus, growth must aim at the promotion of divergent series of investment in which more

economies are created than appropriated.
Development policy, therefore, should be so designed that may enhance the investment in social overhead capital (SOC) is created external economies and discourage investment in directly productive activities (DPA).

Unbalancing the Economy:
Development, according to Hirschman, can take place only by unbalancing the economy. This is possible by investing either in social overhead capital (SOC) or indirectly productive activities (DPA). Social overhead capital creates external economies whereas directly productive activities appropriate them.
(i) Excess of investment in Social Overhead Capital:
Social over-head capital are concerned with those series without which primary, secondary and tertiary services cannot function. In SOC we include investment on education, public health, irrigation, water drainage, electricity etc. Investment in SOC favorably affect private investment in directly productive activities (DPA).
:
Investment in SOC is called autonomous investment which is made with the motive of private profit. Investment in SOC provide, for instance, cheap electricity, which would develop cottage and small scale industries. Similarly irrigation facilities lead to development of agriculture. As imbalance is created in SOC, it will lead to investment in DPA.
(ii) Excess of Investment in Directly Productive Activities:
Directly productive activities include those investments which lead to direct increase in the supply of goods and services. Investment in DPA means investment in private sector which is done with a view to maximize profit. In those projects, investment is made first where high profits are expected. In this way, DPA are always induced by profits.
Priorities: Excess SOC or Excess DPA:
(a) Unbalancing the economy with SOC:
Imbalance can be created both by SOC and DPA. But the question before us is that in which direction the investment should be made first so as to achieve continuous and sustained economic growth. The answer is quite simple. The government should invest more in order to reap these economies, the private investors would make investment in order to enjoy profits. This would raise the production of goods and services. Thus investment in SOC would bring automatically investment in DPA.
(b) Unbalancing the economy with DPA:
In case investment is made first in DPA, the private investors would be facing a lot of problems in the absence of SOC. If a particular industry is setup in a particular region, that industry will not expand if SOC facilities are not available. In order to have SOC facilities, the industry has to put political pressure. That is really a tough job. Thus, excess DPA path is full of strains or pressure- creating whereas excess SOC path is very smooth or pressure relieving.
Big Push Theory of Economic Development | Economics

The theory of 'big push' first put forward by P.N. Rosenstein-Rodan is actually a stringent variant of the theory of 'balanced growth'. The crux of this theory is that the obstacles of development are formidable and pervasive. The development process by its very nature is not a smooth and uninterrupted process. It involves a series of discontinuous 'jumps'. The factors affecting economic growth, though functionally related with each other, are marked by a number of "discontinuities" and "hump."
Therefore, any strategy of economic development that relies basically upon the philosophy of economic "gradualism" is bound to be frustrated. What is needed is a "big push" to undo the

initial inertia of the stagnant economy. It is only then that a smooth journey of the economy towards higher levels of productivity and income can be ensured.
Unless big initial momentum is imparted to the economy, it would fail to achieve a self-generating and cumulative growth. A certain minimum of initial speed is essential if at all the race is to be run. A big thrust of a certain minimum size is needed in order to overcome the various discontinuities and indivisibilities in the economy and offset the diseconomies of scale that may arise once development begins.
According to Rosenstein-Rodan, marginal increments in investment in unrelated individual spots of the economy would be like sprinkling here and there a few drops of water in a desert. Sizable lump of investment injected all at once can alone make a difference.

Rationale for the Big Push:

The basic rationale of the 'Big Push' like the 'Balanced Growth' theory is based upon the idea of 'external economies'. In the theory of welfare economics, external economies are defined as those unpaid benefits which go to third parties. The private costs and prices of products fail to reflect these. And the market prices have to be corrected if an account of these external economies is to be taken. However, the concept of external economies has a different connotation in growth theory. Here, they are pecuniary in nature and get transmitted through the price system.
To explain the emergence of such external economies and their transmission, let us consider two industries A and B. If the industry A expands in order to overcome the technical indivisibilities, it shall derive certain internal economies. This may result in the lowering of the price for the product of the industry A. Now if the industry B uses A's output as an input, the benefits of A's internal economies shall then be passed on to the industry B in the form of pecuniary external economies. Thus, "the profits of industry B created by the lower prices of product. A call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This in turn will give rise to profits and call for further investment and expansion of industry A."
Following such a line of argument, Prof. Rosenstein-Rodan contends that the importance of external economies is one of the chief points of difference between the static theory and a theory of growth. "In the static allocative theory there is no such importance of the external economies. In the theory of growth however," remarks Prof. Rodan, "external economies abound because given the inherent imperfection of the investment market, imperfect knowledge and risks, pecuniary and technological external economies have a similarly disturbing effect on the path towards equilibrium."
Now, the basic contention of the "big push" theory is that such a mutually beneficial way of output expansions is not likely to occur unless the initial obstacles are overcome. There are "non- appropriabilities" or "indivisibilities" of different kinds which if not removed through a "big push" will not permit the emergence and transmission of 'external economies' – which lie at the back of a self-generating development process.

Associated with the removal of each set of indivisibilities is a stream of external economies. A 'bit by bit' approach to development would not enable the economy to cross over certain indivisible economic obstacles to development. What is required is a vigorous effort to jump over these obstacles. As such, for the economy to be successfully launched on the path of self-generating growth a "big push" in the form of a minimum size of investment programme is necessary. In essence, therefore, an all-or-nothing approach to development is stressed in big-push approach to development.

Requirements for Big Push:

The hallmark of the 'big-push' approach lies in the reaping of external economies through the

simultaneous installation of a host of technically interdependent industries. But before that could become possible, we have to overcome the economic indivisibilities by moving forward by a certain "minimum indivisible step". This can be realised through the injection of an initial big dose of a certain size of investment.

Prof. Rodan distinguishes three kinds of indivisibilities and externalities with a view to specify the areas where big push needs to be applied.

They are:

(i) Indivisibilities in the production function, i.e., lumpiness of capital, especially in the creation of social overhead capital.

(ii) Indivisibility of demand, i.e., complementarity of demand.

(iii) Indivisibility of savings, i.e., kink in the supply of savings.

Let us study each of these individually so as to bring out their importance in providing a self-generating stimulus to the development process.

(i) Indivisibilities in the Production Function:

Prof. Rodan argues that it is possible to generate enormous pecuniary external economies by overcoming the 'indivisibilities of inputs, processes and outputs.' The emergence of such externalities would bring about a wide range of increasing returns. To corroborate his contention he cites the case of United States. He feels that the fall in the capital-output ratio in U.S.A. from 4:1 to 3:1 over the last eighty years was chiefly due to the increasing returns made possible by the levelling down of production indivisibilities.

The most important case of indivisibilities and external economies on the supply side resides in the social overhead capital which is now called infrastructure. The most important effect of jumping over this indivisibility is the "investment opportunities created in other industries". Social overhead capital consists of all the basic industries such as transport, power, communications, and such other public utilities.

The construction of these infrastructures involves 'lumpy' capital investments. And the capital- output ratio in the social overheads is considerably higher than in other industries. Moreover, these services are only indirectly productive and involve long gestation periods. Besides, their "minimum feasible size" is large enough. As such it is well-nigh difficult to avoid excess capacity in these, at least in the initial periods. Above all, there is a "minimum industry mix of public utilities" that must be required to divert at least 30 to 40 per cent of their total investment in the creation of social overhead capital.

In this view, therefore, it is possible to distinguish four types of indivisibilities of creating social overhead capital.

They are:

(a) Indivisibility of Time:

The creation of social overhead capital must precede other directly productive industries so that it is irreversible or indivisible in time.

(b) Indivisibility of Durability:

The infrastructures generally last long. The overhead capital with lesser durability is either technically not feasible or is very poor in efficiency.

(c) Indivisibility of Long Gestation Periods:

The investments in social overhead capital, by all counts, involve a highly protracted period of time for their fruition as compared with investments in other directly productive channels.

(d) Indivisibility of an Irreducible Industry Mix of Public Utilities:

Social overhead capital must grow collectively. There is an irreducibly minimum industry

mix of different public utilities that have to be created all at one stroke.
As it is impossible to import the infrastructures, they have got to be produced domestically. And because of the existence of above explained indivisibilities, it is necessary to make 'lumpy' investments in them. And their creation is a precondition to the investments in directly productive and other quick-yielding productive activities. Only then the way for a self-generating economy can be paved. Thus the absence of adequate social overhead capital constitutes the most important bottleneck in the development of developing countries.

(ii) Indivisibility of Demand:

This refers to the complementarity of demand arising from the diversity of human wants. The very fact that there is an indivisibility of complementarity of demand requires simultaneous setting up of interrelated industries in countries to initiate and accelerate the process of development.
Indivisibility of demand generates interdependencies in investment decisions. As such, if each investment project was undertaken independently, it is in most cases likely to flop down. This is because individual investment projects generally have "high risks because of uncertainty as to whether their products will find a market," This point can be clarified with the help of the following well known example given by Rosenstein-Rodan for a closed economy.
To start with, let us suppose that 100 disguisedly unemployed workers in an underdeveloped country were withdrawn and employed in a shoe factory. The wages of the newly employed workers would provide an additional income to them. Now, if they spend all their newly received purchasing power on the shoes, an adequate market for the shoe industry would be ensured. As a result, the industry would succeed and survive.

But the fact is that human beings having diversity of wants cannot simply afford to survive simply by the consumption of shoes and nothing else. As such, they will not spend all their earnings on the purchase of shoes. The market for the shoe industry will, therefore, remain limited as before. Therefore, the incentives to invest will be adversely affected. As a result, the shoe factory investment project might end in a fiasco.
Now let us make a somewhat different assumption to see how an atmosphere congenial to the undertaking of investments can occur. Suppose that instead of only 100 workers being engaged in the shoe factory, 10,000 workers are put to work in 100 different factories producing a variety of consumer goods. These new factories provide larger employment and thus purchasing power to their workers. There is an increase in the total volume of purchasing power and the total size of the market. This is because the "new producers would be each other's customers".
In a way, what has happened is that due to the complementarity of demand, the risk of limitedness of market is greatly reduced. The result is that the incentives to invest are increased. "Thus provided that the total volume of employment and purchasing power is increased by a minimum indivisible step, each factory Will have enough market to reach full capacity production and the point of minimum cost per unit."
We, therefore, find that the indivisibility of demand requires the simultaneous production of a "bundle" of large number of wage goods on which the newly employed workers could spend their income. That alone would ensure adequate market for the product of each producer. In terms of investment the implication is that "unless there is assurance that the necessary complementary investments will occur, any single investment project may be considered too risky to be undertaken at all."
This, as Prof. Higgins remarks, results into indivisibility in the decision-making process. A large-scale investment programme based on complementarity of demand undertaken as a unit may bring forth large increases in national income. But each of the individual investment

projects undertaken singly may not fructify at all.
The essence of the whole analysis is that a high minimum quantum of investment in interdependent industries is needed to overcome the indivisibility of demand and hence that of decision-making. That, according to the big push theory, is the only reliable way of overcoming the smallness of the market size and low inducement to invest in the developing economies.

(iii) Indivisibility in the Supply of Savings:
A high minimum package of investment cannot be undertaken without an adequate supply of savings. But it is not possible to have such high volume of savings in underdeveloped countries due to an extremely low price and high income elasticities of the supply of savings. The savings are low primarily because incomes are low. This, thus, constitutes the third indivisibility. "The way out of the vicious circle," remarks Rosenstein-Rodan, "is to have first an increase in income and to provide mechanisms which assure that in every second stage the marginal rate of savings will be very much higher than the average rate of savings." The Smithian advice that 'frugality is a virtue and prodigality a vice' has to be adapted to a situation of growing income." But in the ultimate analysis the initial big increase in income has got to be provided through an initial big increase in investment.
The existence of the three indivisibilities outlined above make it abundantly clear that the solution to all these lies in a high minimum quantum of investment. Thus, a big push through a minimum indivisible step forward in the form of a high minimum quantity of investment could alone make it possible to jump over the economic obstacles to development in the underdeveloped countries.
Lastly, Resenstein-Rodan considers the role of international trade vis-a-vis the strategy of big push in generating a self-sustaining process of development. In this regard he is of the view that international trade cannot be a substitute for "big push." The provision of some of the needed wage goods through imports can at best help in narrowing down the range of fields which call for a 'big push'. The historical experience provided by the nineteenth century corroborates Rosenstein- Rodan's conclusion that international trade cannot by itself obviate the need for 'big push' altogether.
Once the process of development by an initial application of 'big push' is underway, its sequel course would tend to follow simultaneously three sets of balanced growth relations.
They are:
(i) A balance between the social overhead capital and the directly productive activities (in both the consumer and capital goods sectors).
(ii) A vertical balance between capital goods and consumer goods (including the intermediate goods).
(iii) Lastly, there should be the horizontal balance between various consumer goods industries due to complementary nature of expanding consumer demand.
The Need for Balanced Growth of Centralised Planning:
The mutual benefits arising from the external economies for industrialisation cannot be included in the cost calculations of entrepreneurs to the fullest possible extent without recourse to some sort of centralized 'balanced growth' planning. This is because of a number of reasons. First, due to the imperfections in the market, the free market price system does not adequately give proper signal to the private investors for the future possibilities of expansion in complementary industries.
Second, in developing countries due to the imperfections of knowledge and risks, the response of the private entrepreneurs to any given price signal is quite imperfect and unsatisfactory. Thus, due to the failure to take advantage of the external economies to the fullest extent, investments which may be profitable in terms of 'social marginal net product'

remain unprofitable in terms of 'private marginal net product'. In this view, therefore, there is a need for an integrated investment scheme to be carried out in complementary industries. The best way to do that would be to carry out the investment programme under the direction of some centralised planning authority. An individual entrepreneur in a developing country cannot hope to have all the necessary data which the central planning authority can draw upon.

The crash programme of investment envisaged by the 'big-push' theory cannot by its very nature be made just at random. It has to take into consideration the various balances – horizontal as well as vertical. Only then could the achievement of self-generating, cumulative and harmonious growth of the economy is possible. For this what is necessary is a unified decision-making process. "Allocation of capital," remarks Prof. Higgins, "on the basis of individual estimates of short-run returns on various marginal investment projects is the very process by which the underdeveloped countries got where they are.

The basic reason for government action to promote development is that each of a set of individual private investment decisions may seem unattractive in itself, whereas a large scale investment program undertaken as a unit may yield substantial increase in national income." Prof. Rosenstein-Rodan's theory is essentially a theory of development and thus helps us to examine the path towards development rather than restricting itself simply to the study of conditions at the point of equilibrium. The theory highlights the inefficiency of price system of signalling the desirable directions for investment. It is big-push investment through a centralised planning that could put the developing countries on a self-generating development process.

Evaluation of Rosenstein's Big Push Strategy:

However, Prof. Rosenstein-Rodan's all-or-nothing approach is not perfect in itself in all respects. It suffers from a number of lacunae.

First, the main implication of the 'big-push' theory is State intervention and centralised planning. It is argued that due to imperfections of market the free price system fails to register and thus communicate properly the economic events, much less their future course. But the pertinent question involved here is – will the prevailing circumstances of the developing countries warrant a conclusion to the contrary? The actual fact of the matter is that the current institutional and administrative set-up of the government machinery of the poor developing countries is too weak to cope with the dictates of the 'big push' theory. It is, therefore, quite doubtful whether the government sponsored brand of communication system about the future events would at all be more effective than the free price mechanism.

The governments of developing countries may somehow manage to draw up their initial integrated economic plans. But they are bound to be faced with tremendous difficulties in the execution of these plans. In any comprehensive programme comprising a complex set of related projects, delays and continued revision of the original time-bound schedules are inevitable. "The greater the interdependence", remarks Prof. Myint, "between the different components of the plan, the greater the repercussions of an unexpected or an unavoidable change in one part of the plan on the rest and the greater the need to keep the different parts of the plans continually revised in the light of the latest information available." These are indeed formidable hurdles for the developing countries to cross.

Besides, on account of the poor and incompetent institutional set-ups of the developing countries, there is bound to be insufficient knowledge about the local conditions and an "inefficient feedback of this vital local knowledge from different parts of the country to the central planning machinery." Mere improvement in the standard type of statistical information would not remedy all this.

Above all, the process of unified decision-making and coordination becomes all the more

difficult in mixed economies like India. This is so because not often, the public and private sectors rather than being complementary are in fact competitive with each other. Thus, it may so happen that the "private enterprise is inhibited by uncertainties not only about the general economic situation but also about the future intention of the government regulations."

Thus, it is quite clear that the application of a 'big push' programme in the developing countries with their weak and incompetent institutional and administrative machinery is likely to die its own death. In fact, as Prof. Myint remarks, it can be compared to "an attempt to impose a complete and brand new 'second floor' on the weak and imperfectly developed one floor economy of these countries."

Secondly, the chief plank on which the 'big push' theory is founded is the emergence of a wide range of external economies. Prof. Viner has shown that international trade can provide much more external economies than does the domestic investments. However, the developing countries being primarily primary producing countries, engage a large part of their total investment for their exports and marginal import substitutes, the field where the external economies are found to be very- negligible.

Thirdly, the 'big push' theory concentrates mainly on the industrial sector – viz., capital goods, consumer goods and social overhead capital. The manufacturing sector is considered inherently to be a better vehicle of economic growth. But in the developing countries, the most dominant sector is composed of agricultural and primary production. For a balanced growth of the economy, agriculture also requires a corresponding 'big push'. Any neglect of the agricultural sector in these countries is bound to jeopardise the 'big push' effort.

Fourthly, the major part of the 'lumpy' investments involved in the 'all-or-nothing' approach is called for by the 'technical indivisibilities' embodied in the creation of social overhead capital. Not only is the quantum of investment enormously 'lumpy' but also the capital-output ratio high in the provision of social overhead services than in other directions. Thus, due to the inherent capital scarcity in the developing countries, it is really a matter of dubious wisdom to require these countries to overstrain their meagre resources in the provision of a complete outfit of infrastructures.

The 'big push' theory recommends a 'starting from scratch' concerted action in the creation of social overheads. This is on the implicit assumption that these services are totally non-existent in these economies. However, for most of these countries, remarks Prof. Myint, "the practical question is not whether to have a completely new outfit of these services starting from scratch but how to extend and improve the existing facilities."

Further, the 'big push' theory by its very nature requires the 'lumpy' investments in different social overheads to be made simultaneously and once for all. With the very long gestation periods usually associated with such investments, there are bound to be inflationary pressures in the economy due to the shortage of consumption goods. In an inflationary atmosphere, the process of construction of the social overheads is bound to be a protracted one. In this light it would be better to spread the infrastructure-building activity over a period of time through phasing and changing the time dimension of the projects. This requires selection of a suitable economic size of the social overhead investments.

STRATEGY OF LIBERALISATION, PRIVATISATION AND GLOBALISATION

Introduction to LPG

LPG stands for Liberalization, Privatization, and Globalization. India under its New Economic Policy approached International Banks for development of the country. These agencies asked Indian Government to open its restrictions on trade done by the private sector and between India and other countries.

Indian Government agreed to the conditions of lending agencies and announced New Economic Policy (NEP) which consisted wide range of reforms. Broadly we can classify the measures in two groups:

1. Structural Reforms

With long-term perspective and eyeing for improvement of the economy and enhancing the international competitiveness, reforms were made to remove rigidity in various segments of Indian economy.

Browse more Topics under Liberalization Privatisation And Globalisation

- Liberalization
- Indian Economy During Reforms

2. Stabilization Measures (LPG)

These measures were undertaken to correct the inherent weakness that has developed in Balance of Payments and control the inflation. These measures were short-term in nature. Various Long-Term Structural Reforms were categorized as:

- Liberalization
- Privatization and
- Globalization

Collectively they are known by their acronym LPG. The balance of Payment is the system of recording the economic transactions of a country with the rest of the world over a period of one year. When the general prices of goods and services are increasing in an economy over a period of time, the same situation is called Inflation. Let's understand each terminology in detail

Liberalization

The basic aim of liberalization was to put an end to those restrictions which became hindrances in the development and growth of the nation. The loosening of government control in a country and when private sector companies' start working without or with fewer restrictions and government allow private players to expand for the growth of the country depicts liberalization in a country.

Objectives of Liberalization Policy

- To increase competition amongst domestic industries.
- To encourage foreign trade with other countries with regulated imports and exports.
- Enhancement of foreign capital and technology.
- To expand global market frontiers of the country.
- To diminish the debt burden of the country.

Impact of Liberalization

Privatization

This is the second of the three policies of LPG. It is the increment of the dominating role of private sector companies and the reduced role of public sector companies. In other words, it is the reduction of ownership of the management of a government-owned enterprise. Government companies can be converted into private companies in two ways:

- By disinvestment
- By withdrawal of governmental ownership and management of public sector companies.

Forms of Privatization

- ***Denationalization or Strategic Sale***: When 100% government ownership of productive assets is transferred to the private sector players, the act is called denationalization.
- ***Partial Privatization or Partial Sale***: When private sector owns more than 50% but less than 100% ownership in a previously construed public sector company by transfer of shares, it is called partial privatization. Here the private sector owns the majority of shares. Consequently, the private sector possesses substantial control in the functioning and autonomy of the company.
- ***Deficit Privatization or Token Privatization:*** When the government disinvests its share capital to an extent of 5-10% to meet the deficit in the budget is termed as deficit privatization.

Crisis of 1991 and Indian Economic Reforms

Objectives of Privatization

- Improve the financial situation of the government.
- Reduce the workload of public sector companies.
- Raise funds from disinvestment.
- Increase the efficiency of government organizations.
- Provide better and improved goods and services to the consumer.
- Create healthy competition in the society.
- Encouraging foreign direct investments (FDI) in India.

Globalization

It means to integrate the economy of one country with the global economy. During Globalization the main focus is on foreign trade & private and institutional foreign investment. It is the last policy of LPG to be implemented.

Globalization as a term has a very complex phenomenon. The main aim is to transform the world towards independence and integration of the world as a whole by setting various strategic policies. Globalization is attempting to create a borderless world, wherein the need of one country can be driven from across the globe and turning into one large economy.

Outsourcing as an Outcome of Globalization

The most important outcome of the globalization process is Outsourcing. During the outsourcing model, a company of a country hires a professional from some other country to get their work done, which was earlier conducted by their internal resource of their own country.

The best part of outsourcing is that the work can be done at a lower rate and from the superior source available anywhere in the world. Services like legal advice, marketing, technical

support, etc. As Information Technology has grown in the past few years, the outsourcing of contractual work from one country to another has grown tremendously. As a mode of communication has widened their reach, all economic activities have expanded globally.

Various Business Process Outsourcing companies or call centres, which have their model of a voice-based business process have developed in India. Activities like accounting and book-keeping services, clinical advice, banking services or even education are been outsourced from developed countries to India.

What are the Benefits of Globalization?

The most important advantage of outsourcing is that big multi-national corporate or even small enterprises can avail good services at a cheaper rate as compared to their country's standards. The skill set in India is considered most dynamic and effective across the world. Indian professionals are best at their work. The low wage rate and specialized personnel with high skills have made India the most favourable destination for global outsourcing in the later stage of reformation.