



# Regional Planning -Part IV

## Regional Growth Theories

Sector Theory/ Stage Theory/Export Base Model  
Central Place Theory/Growth Pole Hypothesis/Cumulative Causation Theory



## REGIONAL PLANNING - PART III - REGIONAL GROWTH THEORIES

### Sector Theory - Stage Theory – Export Base Model – Central Place Theory – Growth Pole Hypothesis –Cumulative Causation Theory

#### What makes a region to grow?

Economic theories talk about growth in terms of

1. **increase of income (total income) and / or**
2. **increase of per capita income**

Therefore regional growth implies an increase in the total income and/or per capita income of a region. Since the growth of income is always the result of the growth of the use of factors (e.g. land, labour, capital, raw material) of production, **regional growth should imply a better use of the factors of production such as land, labour, capital etc. of the region.**

In addition to these factors, **a region can also grow due to an increase in the level of demand for its commodities from the other regions within the country or outside the country.**

Thus in regional analysis, growth of a region can result either from **endogenous** (within) factors or from **exogenous** (outside) factors **or both**. Sometimes growth may result from a right location of industries/services. Consequently there are theories of regional growth which attempt to explain the growth of a region in terms of

1. **Endogenously induced process.** e.g. Sector theory, stage theory
2. **Exogenously induced process** e.g. Export base model
3. **Spatially induced process** e.g. Growth pole, Central place

### Endogenously Induced Process

#### Sector Theory

The sector theory has its origin in the empirical observations made by **Colin Clark, Simon Kuznets** and others. It is based on the contribution of different sectors of economy at different levels of development. The sector theory places attention on structural changes taking place within an economy in contrast to the export base theory, which emphasizes the role of external relationships. **According to sector theory, the process of economic development is accompanied by a shift in the employment pattern first from primary to secondary sector and later on to the tertiary sector.** The explanation is based upon the different income elasticity for the products of these sectors and the relative differences in the

Demand for a product is proportionate to its price. A small change in the price may lead to a greater change in demand. In such cases the demand is called elastic. On the other hand, even a big change in price may not cause any change in demand. Such demand is called inelastic e.g. salt.

When income increases, demand for secondary & tertiary products and services increase.

average earnings per worker in different sectors. The theory is empirically verifiable in terms of cross section and historical trends in different countries or major regions within them.

The sector theory with its emphasis on structural changes, differences in elasticity of demand and productivity differences among sectors throws light on some important

### Sector Theory

The three-sector hypothesis is an economic theory which divides economies into three sectors of activity: extraction of raw materials (primary), manufacturing (secondary), and services (tertiary).

**Primary sector:** Involves the extraction and production of raw materials, such as corn, coal, wood and iron. (A coal miner and a fisherman would be workers in the primary sector.)

**Secondary sector:** Involves the transformation of raw or intermediate materials into goods e.g. manufacturing steel into cars, or textiles into clothing. (A builder and a dressmaker would be workers in the secondary sector.)

**Tertiary sector:** Involves the provision of services to consumers and businesses, such as baby-sitting, cinema and banking. (A shopkeeper and an accountant would be workers in the tertiary sector.)

Based on ownership the economy may be subdivided into:

1.Public sector 2.Private sector 3.Voluntary sector

Based on the type of product produced, the economy may be subdivided into:

Industrial sector & Service Sector

According to the three sector economic theory the main focus of an economy's activity shifts from the primary, through the secondary and finally to the tertiary sector. The process is essentially positive, and results in increase in quality of life, social security, blossoming of education and culture, higher level of qualifications, humanization of work, and avoidance of unemployment.

Countries with a low per capita income are in an early stage of development; the main part of their national income is achieved through production in the primary sector. Countries in a more advanced state of development, with a medium national income, generate their income mostly in the secondary sector. In highly developed countries with a high income, the tertiary sector dominates the total output of the economy.

The distribution of the workforce among the three sectors progresses through different stages

#### First phase: Traditional civilizations

##### Workforce quotas:

\* **Primary sector: 70%** \* **Secondary sector: 20%** \* **Tertiary sector: 10%**

This phase represents a society which is scientifically not yet very developed, with a negligible use of machinery. The state of development corresponds to that of European countries in the early middle ages, or that of a modern-day developing country.

#### Second phase: Transitional period

##### Workforce quotas:

\* **Primary sector: 20%** \* **Secondary sector: 50%** \* **Tertiary sector: 30%**

More machinery is deployed in the primary sector, which reduces the number of workers needed. As a result the demand for machinery production in the second sector increases. The transitional phase begins with an event which can be identified with industrialization: far-reaching mechanization (and therefore automation) of manufacture, such as the use of conveyor belts.

The tertiary sector begins to develop, as do the financial sector and the power of the state.

#### Third phase: Tertiary civilization

##### Workforce quotas:

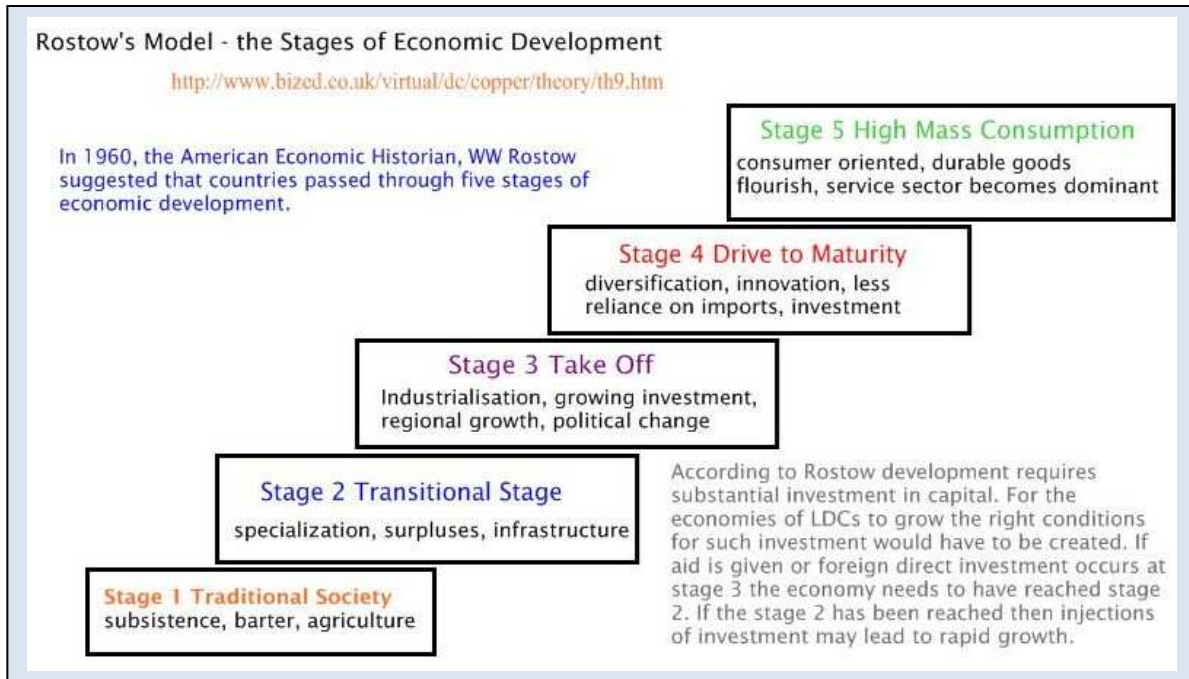
\* **Primary sector: 10%** \* **Secondary sector: 20%** \* **Tertiary sector: 70%**

The primary and secondary sectors are increasingly dominated by automation, and the demand for workforce numbers falls in these sectors. It is replaced by the growing demands of the tertiary sector. The situation now corresponds to modern-day industrial societies and the society of the future, the service or post-industrial society. Today the tertiary sector has grown to such an enormous size that it is sometimes further divided into an information-based quaternary sector, and even a quinary sector based on non-profit services.

elements in the growth of an economy. It provides a useful frame of reference for aggregating data for comparative studies. However, the theory is criticized. The main weakness of the sector theory is its neglect / ignorance of the role of external factors in regional development. Reliance on aggregation of data at a very broad level also has its limitations.

### Stage Theory

Another approach to understand regional development is provided by the stage theory, which visualizes economic development as a process of transformation through



successive stages. Proponents of this theory believe in a regular or normal sequence of stages of growth. Most famous of the stage theory is that of **Rostow**, who has distinguished five stages of growth on the basis of development experience of a number of countries i.e., **the traditional society, the pre-conditions of take-off, the take-off, the derive to maturity and the age of high mass consumption.**

**Hoover and Fisher** have applied the stage theory in the regional setting. They have visualized the transformation of a region from an agricultural to an industrial economy through the following successive stages of development: **subsistence agriculture; local specialization based on trade; cash-crop farming; mining & manufacturing; diversified manufacturing; and specialization in tertiary industries for export.** They observe that a

- 1. Traditional Society**  
 Pre-Newtonian science & technology  
 Political power – landed aristocracy
- 2. Pre conditions for take off**  
 New learning or Renaissance  
 New Monarchy  
 New Religion or Reformation  
 Building up to social over head capital  
 Technological revolution in agriculture  
 Reactive nationalism (against foreign domination)
- 3. Take off stage**  
 Rise in the rate of productive investment  
 Development of one or two manufacturing sector  
 Emergence of institutional frame work
- 4. Drive to maturity**  
 Change in the working force-skilled urbanization  
 Change in the qualities of entrepreneurs
- 5. Age of High Mass consumption**  
 Movement to suburbs  
 Use of automobiles  
 Use of household goods & gadgets

non-industrialized region may reach a limit to its growth and start decaying, suggesting that if a region is to continue to increase its per capita income it must eventually industrialize.

## Exogenously Induced Process

### Export Base Model

**Export:** to carry or send out of a country, as goods in commerce; a commodity which is or may be sent from one country to another in traffic.  
**Invisible export:** money spend by the tourists from abroad  
**Visible export:** goods sold by the traders abroad.

**Export Base Model (EBM)** emphasis the exogenous factors in regional growth. It points out that regions are not closed areas but are open to the flows of trade.

Export Base Model (EBM) indicates that growth of a region depends upon the growth of the regional export base; Regional export depends on the expansion in demand external to the region. As a consequence of export sales, income in the region increases leading to an expansion of residentiary activities, development of external economics and further regional growth.

The export base theory, initially developed in the context of the growth of urban areas was used to explain the process of regional economic development by **D.C North**. He looks at the **region as a territory developing around a common export base**. He thinks that the growth of a region “**is closely tied to the success of its exports and it may take place either as result of the improved position of existing exports relative to competing areas or as a result of the development of new exports.**” Understanding the comparative advantage in producing goods and services in demand to the existing markets outside the region, which in turn attracts productive factors in a region facilitates the growth of a region.

The distinction between **basic and non-basic activities** is crucial to the theory of export base. **The basic activities are those the product of which is intended for the export market, while the non-basic or residentiary activities are those which cater to the local market.** The non-basic activities are regarded as depending upon the basic activities and the ratio of income or employment generated in the two types of activities is taken as a multiplier. The expansion of the export base in response to increasing outside demand is seen as the principal factor determining the growth of income in a region through the multiplier effect on the residentiary activities.

### Calculating Multiplier

#### Calculating Multiplier

$$m = \frac{\text{Increase in total income in basic activities } 10000 + \text{non basic activities } 20000}{\text{Increase in total income of basic activities } 10000}$$

In a region, if the income in basic activities is increased by 10,000 units and this results in increase in income in non-basic activities by 20,000 units we have  $10,000 + 20,000 = 30,000 / 10,000 = 3$       **Income multiplier = 3**

The chief merit of the export base theory lies in the fact that it links the growth of a region with changes in demand in the other regions of the nation and the world.

**Benefits:**

1. When a region specializes in the production of a few goods due to inter-regional trade and division of labor, it exports those commodities, which it produces cheaper, in exchange for what others can produce at a lower cost. It leads to increase in regional income, raises the level of output in the export sector and raises growth.
2. Higher the level of income and output breaks the vicious cycle of poverty.
3. When the export base is increasing, many entrepreneurs will enter into it; competition arises; it leads to lower the cost of production either by technological improvement or better use of the factors of production.
4. As a consequence of the expansion of income received from outside, increased investment in residentiary activity will take place.
5. Exports provide the basis for the importation of capital from outside.

However, in spite of its wide appeal the export base theory has been severely criticized on a number of accounts.

Firstly, as Tiebout points out **“there is no reason to assume that exports are the sole or even the most important autonomous variable determining regional income.** Such other items as business investment, government expenditure and the volume of residential construction may be just as autonomous with respect to regional income as are exports.

Secondly, the theory errs in ignoring the role of internal growth sequences and in treating the residentiary activities as purely passive. The development of the residentiary activities is itself an important determinant of a growth of a region.

Thirdly, the volume of exports from a region is also the result of the income elasticity of demand. Although the export base theory may be able to explain the process of growth of small regions depending upon exports, the growth of large regions like Eastern U.P. cannot be explained without reference to endogenous factors operating in the region.

In addition to the above three criticisms, another important criticism against EBM is, at times export base won't lead to the growth of the regional economy.

E.g.

- Additional income acquired through export may be frittered away on imported luxury goods.
- The businessmen who acquire such income may not invest in the same region.
- Some times export trade may lead to backwash effect in the underdeveloped regions.

E.g. Bihar & Orissa they have a wide export base but not experienced growth

- When the exports are made to developed regions, it will lead to negative demonstration effect; and will affect the capital formation in the region.

**Conclusion:**

Inter-regional trade opens new opportunities of specialization and development for the regions engaged in it. Export base model bring into use hither to unexploited natural resources and may free the regions from the limitations of their own domestic markets.

### **Input-Output Analysis**

Leontief (1951) developed input-output model. It helps to understand and determine the interdependence of various sectors of the economy. It assumes that economy consists of a number of interacting industries i.e. the output of one industry may be used as an input for other industry

<u>Input</u>	<u>Output</u>
- Something which is brought for the enterprise	- Something which is sold by it.
- Input-that which is procured	- Output-that which is produced
- Represents the expenditure of the firm	- Receipt part of the firm
- Sum of the money values of inputs is the total cost	- Sum of the money values of the output is the total revenue

### **Friedmann’s Synthesis of Theories of Regional Development**

In spite of the vast literature that has come out in the last twenty-five years, our knowledge of the spatial incidence of economic growth remains limited. We are as yet nowhere near a complete theory of regional development. However, the existing literature has led to certain important generalizations, which have met with wide acceptance. **Friedmann** has presented a synthesis of the generalizations concerning regional economic development in terms of the following eight propositions:

1. Regional economy is open to the outside world and subject to external influence.
2. Regional economic growth is externally induced.
3. Successful translation of export sector growth into growth of the residentiary sector depends of the socio-political structure of the region and the local distribution of income and patterns of expenditure.
4. Local leadership is decisive for successful adaptation to external change. Yet the quality of leadership depends on the region’s past development experience.
5. Regional economic growth may be regarded, in part, as a problem in the location of firms.
6. Economic growth tends to occur in the matrix of urban regions. It is through this matrix that the evolving space economy is organized.
7. Flows of labour tend to exert an equilibrating force on the welfare effects of economic growth. But contradictory results may be obtained.
8. Where economic growth is sustained over long periods, its incidence works towards a progressive integration of the space economy.

## THEORIES OF INDUSTRIAL LOCATION & SPATIAL DEVELOPMENT

Theories of industrial location attempts to explain

- 1) Why the industries are located in a particular place?
- 2) Why the locations are shifted?
- 3) What can be the best location for a particular industry?

Answers to these questions provide guidelines for spatial development.

Theories of industrial location can be classified into three categories.

1. Those which emphasis cost factors
2. Those which emphasis demand
3. Those which are concerned with locational interdependence

### Least Cost Approach (Van Thunen & Alfred Weber)

**Van Thunen, (1826)** a German Scholar, made the first attempt to develop a theory of location emphasizing cost factors. In his book ‘**The Isolated State**’, Thunen considered the problem of location of various forms of agricultural production in relation to markets. He concluded that location depends upon the value of the commodity in the market and cost of its transportation.

### Assumptions of Van Thunen

He explained how the space is organized through a workable model of the land use pattern. To explain his hypothesis

- **He imagined an isolated state.**
- **A large town existed in the centre of the agricultural field, which had no counter magnets in its vicinity. The town drew its production from the plain, to which it supplied the manufactured products.**
- **The transport network in the region, roads & navigational canals was poor i.e. extremely poor transportation linkages.**
- **At a considerable distance, the plain ended in an uncultivated wilderness.**

The question that Van Thunen asked was: “**How will the agriculture of the plain be arranged in such circumstances?**”

Thunen’s answer was, “**cultivation would be arranged in a series of concentric circles round the town, according to the cost of transportation of the commodity and the ratio in which its value stood to its bulk and weight. A series of concentric rings would tend to grow up around the city and a specific pattern of land-use would dominate within each ring.**”





1) In the ring closest to the city, those items that could bear transportation least of all, or on which transportation charges would be out of proportion to the market price, would be produced.

E.g. items perishable in nature, items less in weight, dairy farming, horticulture crops, vegetables etc.

2) More distant belts would specialize in products, which were more in weight and volume, but fetched higher prices in the market.

**Alfred Weber**

The first comprehensive effort at developing a theory of location was made by **Alfred Weber** (1909). Weber also emphasized the cost factors (least cost approach) to the theory of industrial location.

A/c to Weber, location depends upon

- a) **Raw materials**
- b) **Cost of transporting raw materials**
- c) **Cost of labour**
- d) **Agglomeration & deglomeration tendencies**

**b,c,d** are considered as a primary regional factors which influence the location of industries. Weber emphasis that **the best location is the place where the production costs would be lowest.**

**Demand Approach:**

**August Losch** was the proponent of this approach. He criticized the least cost approach for omitting the demand can serve an important role in determining the location of industry. He further argued that the best location would be that which would command, the largest market area, since this would bring in the highest sales revenue. **Point of largest sales should be**

<b>WEBER</b>	<b>AUGUST LOSCH</b>
Least cost approach	Profit maximization
Ignoring market	Ignoring the raw material

**the correct location; place of greatest profit is the right place.**

Even though both the theories are one sided, August Losch approach helps us to understand the **formation of hexagons**, which in turn helps us to understand the **Central Place Theory**.

To explain his theory August Losch made the following assumptions.

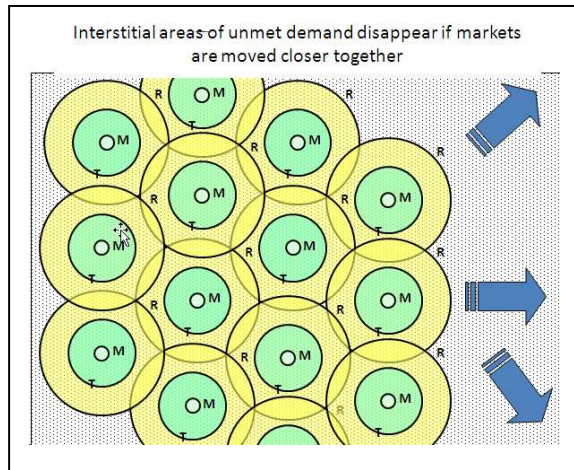
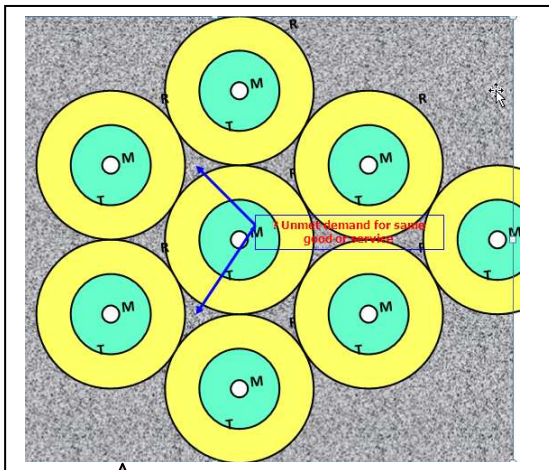
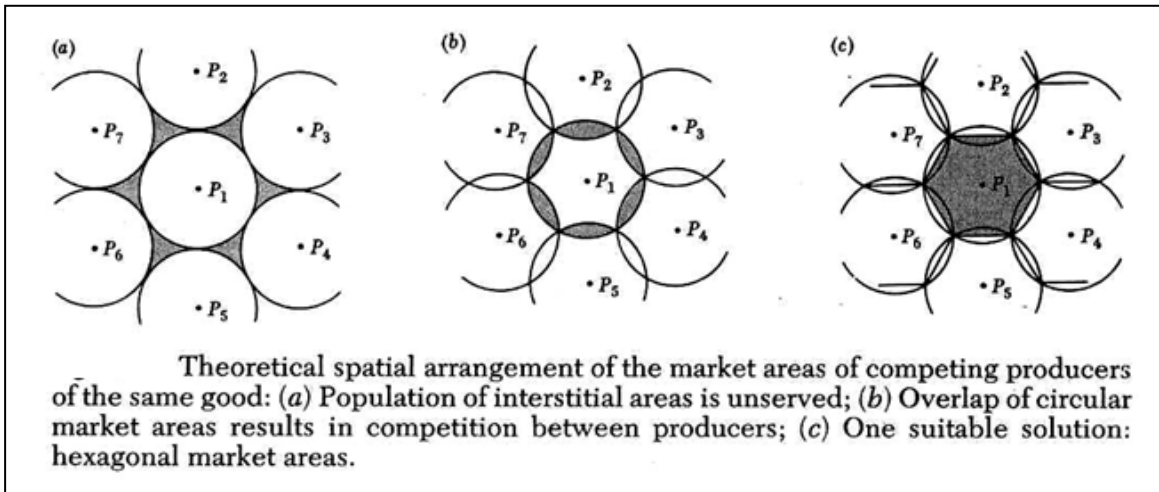
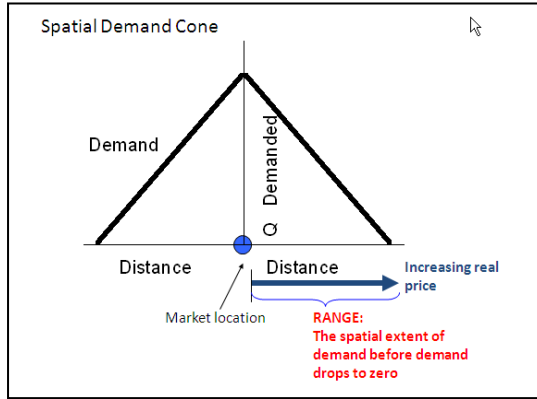
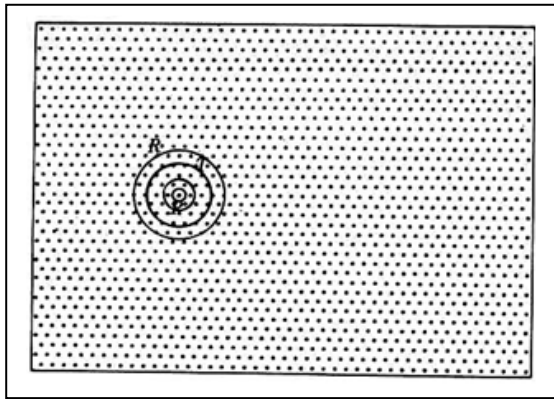
- 1) An isotropic plane – a homogeneous land surface with respect to population distribution, standard of living, demand and production.
- 2) In that plane, transportation costs are proportional to the distance.
- 3) In that situation, the shape and size of the market area will depend upon the price of the product and the rate of transportation costs.

To take an illustration let us consider the example given by Losch.

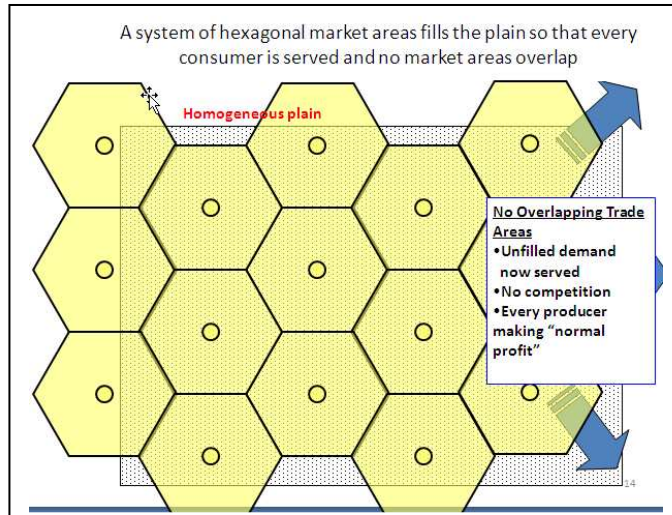
**Formation of Hexagons**

Suppose there is a farmer who produces bear over and above his requirements. If OP is the price at the brewery, which is at P, those living there will buy PQ bottles of bear. Further away, the price is higher by the amount of the freight, and the demand consequently shrinks. When the price costs are PF, the total price rises to OF and the demand shrinks to Zero. Thus PF will be the extreme sales radius for bear. By rotating the triangle PQF on PQ as an axis we obtain the demand cone, whose volume gives the total sales of the brewery at point P and thus denote the market area of the brewery.

Regional Planning Part III –Regional Growth Theories - Sector/Stage Theories- Export Base Model  
 – Central Place Theory /Growth Pole Hypothesis/Cumulative Causation Theory



These diagrams illustrates how circular shaped markets get transformed into hexagon shaped markets



It is possible that other farms may also produce surplus beer, which they would like to sell in the market. As long as profits are made, new breweries will continue to be established, each brewery having a circular market area.

As the number of breweries increases, the circular areas touch each other, but even now, the whole space is not covered and some area will remain unserved.

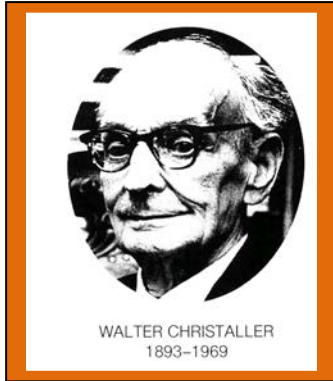
The only possibility by which the total area can be served is through overlapping circles.

Ultimately hexagons are formed. The hexagonal form is the most efficient one since among all the possibilities of utilizing the corners, the hexagon retains most of the advantages of the circle.

Hexagonal arrangement ensures efficient division of space between a numbers of central places.

## CENTRAL PLACE THEORY Essential Features

**Walter Christaller (1933)** has discovered that there is some ordering principle governing the distribution of towns and cities, that is, settlements concerned with the provision of goods and services.



His theory is designated as the ‘**theory of location of urban trades and institutions**’ to be placed beside Van Thunen’s theory of the ‘**location of the agricultural production**’ and Alfred Weber’s ‘**theory of location of industries**’

In the original formulation of the theory by **Walter Christaller,**

he explained **central place is the source of goods and services to the surroundings – beyond its own area.** Implicit in the theory is the complementary relation of the two areas and the conditions governing the spatial distribution of central places and their hierarchical arrangement.

The theory was formulated to provide answers to the questions why cities, towns, and villages are distributed as they are, and why there are the degrees of size. The theory foreshadowed by several previous German writers, especially **Robert Gradmann,** and by few others, but **Christaller** was the first to fortify the theory with extensive and detailed analysis.

**Christaller** claims that the theory is organically based on the “ **The crystallization of mass around a nucleus is, in inorganic as well as organic nature, an elementary form of the order of things, which belong together – a centralistic order.** This order is not only a human mode of thinking, existing in the human world of imagination and developed because people demand order; it in fact exists out of the inherent pattern of matter.”

In the Central Place Theory (CPT) of Christaller, **centrality means importance. It is manifested by the quantity and quality of different services and functions provided by the settlement.** It is defined as the functional importance of settlement of the central place. Functions determine the centrality of the centre and not the location.

One of the most important characteristics of a central function is that it generates spatial interactions, through the movement of men, materials and ideas between the center place and the complimentary region surrounding it. Rare the function, the higher the range of the interaction.

Each center has its complimentary area and from the center emanates the **centrifugal or distributive functions and from the complimentary areas to the center gravitate centripetal activities or activities of collection.**

According to **Walter Christaller** ‘ a central place is defined as a settlement providing services for the population of its hinter land (known as complementary region), supplying it with central goods and services (educational, leisure and cultural facilities) as well as those of retail and wholesale trade.

Central places vary in importance. Depending upon the central functions performed by them and the population served, they can be classified as higher order centers and lower order centers. Higher order centers stock a wide array of goods and services and serve a large population, lower order centers stock a smaller range goods and services and serve a smaller population.

Besides population, a settlement’s importance as a central place depends upon numerous factors.

- (1) The supply of goods to the population at surrounding areas,
- (2) Provision of resort amenities,
- (3) Nodes on transportation networks,
- (4) The provision of banking and commercial facilities,
- (5) The provision of educational and cultural facilities, and
- (6) Governmental and other administrative functions.

The growth of a central place is also dependant on numerous factors such as (1) the amount of support that is required for a particular function called threshold population, (2) Spatial competition, and (3) the chance of a particular central place for the location of new functions.

Central place theory is usually explained by using three concepts associated with it.

- 1. Centrality**
- 2. Threshold**
- 3.Range of central good.**

#### **Assumptions of Central Place Theory**

CPT is not based upon the actual pattern of settlements, but it a geographers dream about the ideal hierarchy as they would like to see and present it on a map.

The Central place theory assumes certain situations related to settlements – hamlets, villages, homesteads and cities. These assumptions are:

- (1) The Landscape is even with an even distribution of natural resources and an even spread of population – invariably assumed to be farmers. “People do the marketing in a circular area”.
- (2) The radius of the circle of the marketing i.e. ‘the extent of the market’ is the function of transport cost. The circles so overlap that the common areas of overlap provide hexagonal shapes, and all consumers and area are served by various centers.
- (3) Population is evenly distributed in all the directions and the movement of people in all the directions is unimpeded and involves equal unit transport cost.
- (4) All people are rational: they want to minimize cost (transport cost and the time cost of traveling in particular) and maximize gains.
- (5) All the consumers have the same purchasing power
- (6) Lower order functions are available at lower order places and higher order functions at higher order places, though higher order settlements have many lower order functions also.
- (7) The relationship between settlement nodes is orderly and not disorderly. There is a hierarchy of functions related to the hierarchy of settlements. In a small village there will be a rural post box and a delivery postman while in a big city most developed modern electronic facilities are available.  
In every field there are facilities ranging from the lowest to the highest order. (Primary school to institutes to specialize learning and research; village dispensary to specialized institutes of surgery / medical treatment; one counter bank to big banks using computers and exchanging of currency in the world).
- (8) Each lower or higher order service requires threshold population. A cinema hall will require a minimum film–viewing public to (say) 500 members per show. A threshold population and efficiency of transport system (Low transport cost) will sustain a facility.

### 1. Centrality.

The centrality of a settlement (urban centre) is defined as the ratio between the services provided and the local needs of its inhabitants. The increasing or decreasing centrality of a place depends on the extent to which it functions for the surrounding region. Christaller give a simple mathematical explanation. If the town has an aggregate importance of **B**, of which **Bz** represents the town's population, then  $B - Bz =$  the surplus of importance for the surrounding region, and it is this, the magnitude of the surplus, that shows the degree to which the town is a central place.

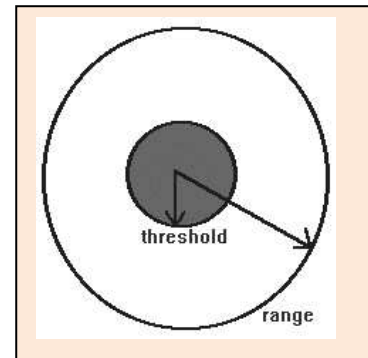
How is it possible to measure the centrality of a place and its importance as such?

#### Other indicators

business turnovers of the shops

number of central functions such as whole sale and retail stores

professional services located in a settlement



Christaller stated that centrality “is equal to the relative importance of the place in regard to a region belonging to it”. He suggested that the best method of determining the importance of a place as a centre is, not by the size of the population, but by the number of telephone connections.

Professor Edward Ullman suggested some, such as “the average number of customers required to support certain specialized functions in various regions,” and, “the excess of these functions over the normal requirement of the urban population.’ Another suggestion is the number of automobiles entering a town excluding those from the suburbs.

### 2. Threshold

Threshold is the minimum sales volume needed to support a business or service; below this level it will not be profitable to supply a good or a service

### 3. Range of a central good/service

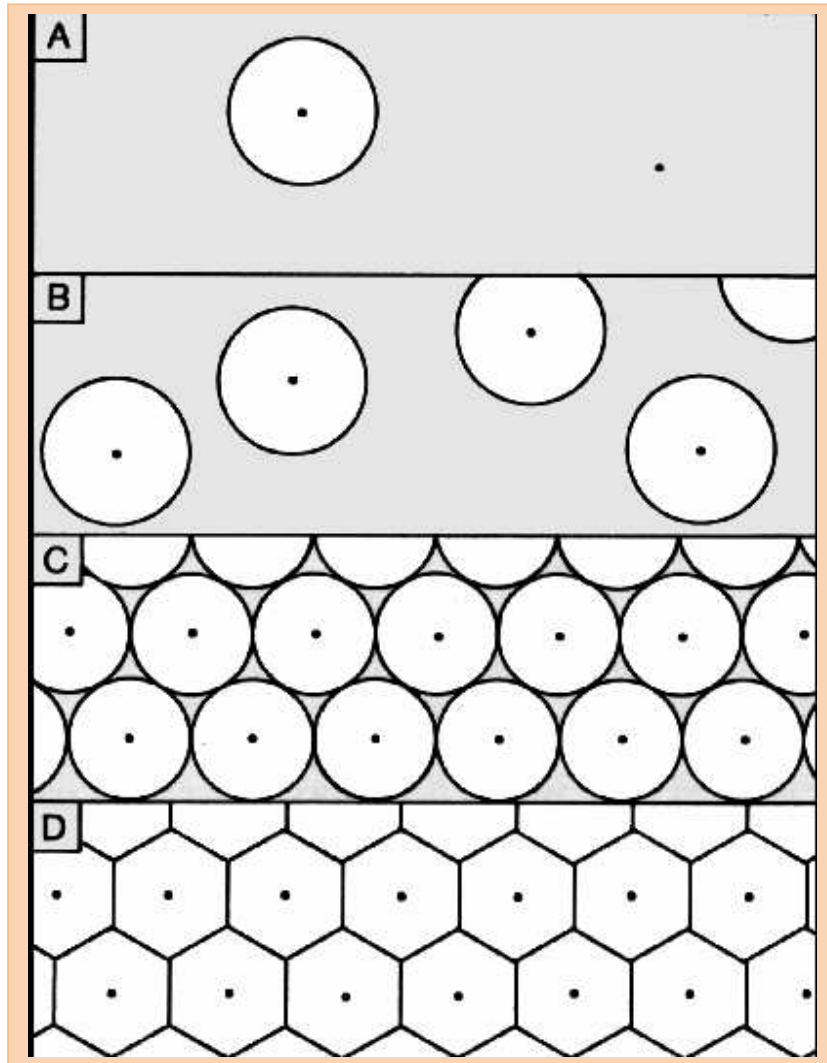
**Range of a central good/service** delineates the market area of a central good/service. It is the maximum distance that consumers are willing to travel (Keeping in view the price of the good) to purchase the good. If we assume that travel is equally easy in all directions, the range of a central good will be a perfect circle round the central place.

As far as the spatial development plans / programs are concerned, central place theory is more understandable and more viable, if it is formulated in a series of simple concepts, such as the range of a good / service and of threshold. By using these concepts, the planners can visualize a hierarchical structure of central places to provide goods and services.

The assumptions adopted by Christaller to explain his theory are:

- the landscape is an even plain with an even distribution of natural resources and an even spread of population, producers and consumers, and
- the movement in every direction is unimpeded and involves equal unit cost.

Now let us assume a farmer selling his produce at point A as in the diagram. Other farmers are willing to travel distance ‘a’ to purchase from this farmer. Since we have assumed that travel is equally easy in all directions, the market area for the farmer at A is given by the circle with radius ‘a’.



In time more producers may develop their own separate market areas as shown in the diagram. With the development of transportation and communications the market areas will expand and there will be an attempt to cover the maximum possible space. With circular market areas we can have a situation as in the diagram. While in the diagram there are several unserved areas (the shaded region in the figure), in the diagram there is considerable overlapping. Neither of these instances gives a stable result. While in the former case the unserved areas will have to be split equally between neighboring areas, in the latter consumers in the shaded region will tend to choose the nearest centre.

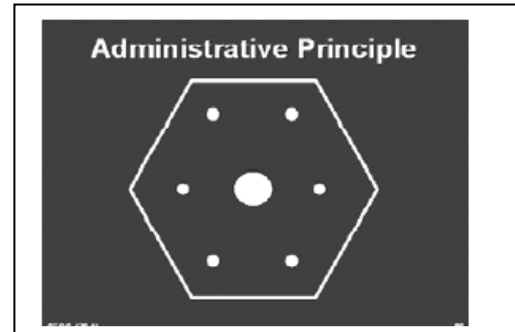
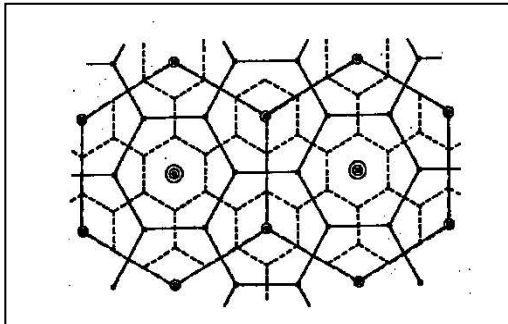
Ultimately hexagonal market areas will emerge as given in the diagram. It is only this hexagonal arrangement that ensures an efficient division of space between a number of central places.

### Hierarchy of Central Places

Christaller’s basic model is organized on the basis of what he calls the marketing principle. The hierarchy and nesting pattern in this case results in the maximum number of central places—a necessary condition if the supply of goods from the central places is to be as near as possible to the consumers (according to the requirement of movement minimization). Such a system, is known as a K=3 network and is shown by filled circles; the next the lower order places (e.g., villages are shown by open circles; and the high order places (e.g., towns) are shown by double circle. Trade area boundaries of these three order settlements are indicated in the figure by solid lines, dashed lines, and double lines, respectively.

The k-value is the total number of settlements of a certain order served by a central place of the next higher order. As would be clear from Fig.5, each hamlet is shared between three

villages as shown by the arrows. Since a village has six hamlets at the corners of the hexagon surrounding it, each village serves  $[(1/3)*6] = 2$  hamlets. Adding to this the hamlet part of the functional structure of the village itself (which is obviously served by the



village itself), each village serves the equivalent of **3 hamlets, i.e. K= 3.**

In a similar way it can be shown that a town serves three villages (and therefore nine hamlets) the central place of the next higher order (say, city) will serve three towns, i.e. nine (3\*3) villages or 27 hamlets (9\*3). Thus, the number of centers and successfully lower order levels in the hierarchy follows a geometric progression (i.e., 1, 3,9,27, etc.).

The 'K' value is the total no of settlements of a certain orders served by a central place of the next higher order. It is the total no of settlements served by the center place.

There are three types of 'K' values assigned by Christaller

1. The Marketing Principle 'K' value which is equal to 3.
1. The Transporting Principle 'K' value is equal to 4.
3. The Administrative Principle 'K' value which is equal to 7.

In addition to the **principle of marketing**, Christaller proposes other principle too – the **principle of transportation or principle of traffic** and **principle of administration**. The principle of transportation assumes importance in those cases where cost of transportation is significant. According to this principle, the distribution of central places is at an optimum when as many important places as

possible lie on one traffic route between larger towns, the route being established in the cheapest possible manner. Thus sub-centers lie along the routes between the main centers and we have an arrangement as given in fig .6. A hamlet is shared by two villages as represented by the arrows and since a village is surrounded by 6 hamlets (each hamlet being situated midway between two corners of a hexagon and lying on the straight line connecting to villages), each village serves  $(\frac{1}{2} * 6) = 3$  hamlets. Adding to this, the hamlet part of the functional structure of the village itself, each village serves the equivalent of  $(3 +1) = 4$  hamlets therefore  $K = 4$ .



**Marketing Principles and ‘K’ value.**

Christaller conceived that there are six hamlets at the corner of the hexagons surrounding the village. Since the hexagon is divided into three parts (see hexagon diagrams), each village serves  $1/3^{\text{rd}}$  of the six hamlets i.e., two hamlets.

Adding to them will be the village itself and the ‘K’ value becomes 3.

A town serves 3 villages and hence 6 hamlets. The central place of the next higher order (city) will serve three towns or 9 villages or 27 hamlets.

In the scheme of Christaller, each center place is surrounded by six lower order places which are situated at the vertices of the hexagon. When the original center place is surrounded by six other center places of the same order, the first order trade area of each of the lower order places is competed for by three of the first order places. Therefore, each first order place can depend upon the full first order trade area from itself and one-third of the first order trade area from each of the six lower order places.

This market principle is called the ‘K =3’ pattern, because it has the trade of one (itself) and 6 times the one – third ( $6 * 1/3 = 2$ ) of the trade of the other areas. Thus, the frequency of occurrence of different levels of market area follows the geometric progression of 1: 3: 9: 27: 81: 243 & so on, at successively lower levels of the hierarchy.

**Transportation Principle and ‘K value’**

This is also known as the ‘Principle of traffic’. If several habitations lie on a route, then the route will be more efficient and cheap. Sub- centers should lie on the route to center. (See diagram of the transportation principle). Two villages share a hamlet.

Since a village is surrounded by six hamlets (each hamlet being situated between two corners of a hexagon and lying on the straight line connecting two villages), Each village serves ( $1/2 * 6$ ) 3 hamlets. Adding the village itself, we get ‘K’ value as 4.

The sub- centers in the Christallers scheme of things have “dual loyalty”. The traffic leads to a hierarchy which minimizes the distance between the sub-centers and the main center.

**The administrative principle and ‘K’ value.**

This principle emphasizes that each center should have complete control of the 6 surrounding areas and no divided allegiance exists. No power sharing between lower and higher order centers is permitted. The center governs itself also and hence the ‘K’ value is

The administrative principle is based upon the idea that each centre should have complete control of the six surrounding areas with no divided allegiance. Thus, in this case, sharing of the lower order centers between the higher order centers is not permitted. Therefore, it is  $K = 7$ .

**Central place theory** remains even today unsurpassed as a coherent model of spatial organization of the service activities of man. Central place theory indicates that the region can be served by goods of various types, if the central places producing different ranges of goods / services are evenly distributed. The distances separating the settlements will be greater in case of higher centers and proportionally less in the case of lower order centers.

All the central places constitute a hierarchy from the smallest villages to the largest towns of national importance.

### **Criticism**

1. Applicable only to service sector which is only a part of the total economy.
2. The hierarchy system would be distorted by the location of primary or manufacturing industry.
3. The assumption that the consumer will act rationally and patronize the nearest center is not correct.
4. Most criticized for its static and descriptive nature, as it deals with its relationship between centers and their hinterlands only at one point of time, but fails to take into account the evolutionary process of spatial structure i.e. how the structure has evolved and might change in future.

However with certain modifications central place theory can be used as a starting point for the spatial development of tertiary activities and social services in any situation. Notwithstanding its limitations one has to admit that it is a marked improvement over Van Thunen's theory even today, it provides the most rational approach to the arrangement of human activities, apart from manufacturing.

### **Modifications in the Central Place Theory.**

**August Losch**, refined the central place theory by incorporating non-service activities in its functions, August Losch model postulated that there is one superior centre where all goods are produced. The size of the centers increases with distance from the central place and those small centers tend to be located about half way in between larger ones. Losch considered that the size of the hexagon not only in relation to a geographical centre, but also, in relation to the goods produced. Thus a particular centre may have several hexagonal markets for its different products as transport cost is a function of distance, a particular industry X with lower cost transportation will have a bigger hexagonal market area than Y, given the same economics of scale.

## GROWTH POLE HYPOTHESIS

A French regional economist Francis Perroux (François Perroux -1955) introduced the concept of ‘Growth Pole’. According to this concept public investment programs will have maximum effects on a regional growth if concentrated in a small number of favorable locations in regional development policy.

### Assumptions

#### Assumptions:

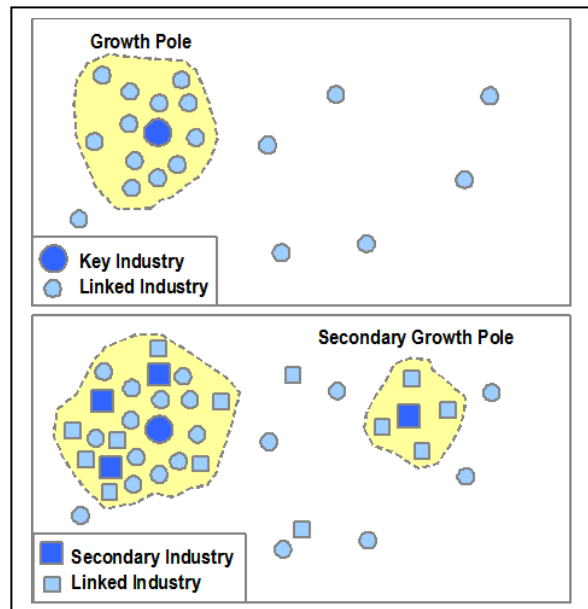
The concept of growth poles and growth centers is based on certain assumption about the real world.

1. Human activities must cluster together to generate internal and external economics of scale.
2. If clustering is allowed, it may entail heavy social costs in terms of congestion, diseconomies of scale and spatial imbalances in social and economic development.
3. The autonomous process, which generate clustering of human activities and there by create spatial imbalances in economic development, can be directed through policy interventions to generate growth foci in areas where they do not exist.



#### Perroux Hypothesis:

One of the basic objectives of Perroux’s hypothesis is to advance a dynamic theory economic growth, taking the concept of **innovative firms** as the starting point. To him large economic units are innovative. It exerts its influence on the economy through inter-industrial linkages. Without explaining how the leading industry with strong inter-industry linkages finds a location at which to form a nucleus around which other industries cluster, he concluded that such clusters will become growth poles if several leading and propulsive industries come together to form a complex large enough to exert a determining influence over its industrial environment.



The core idea of the growth poles theory is that economic development, or growth, is not uniform over an entire region, but instead takes place around a specific pole. This pole is often characterized by a key industry around which linked industries develop, mainly through direct and indirect effects. The expansion of this key industry implies the expansion of output, employment, related investments, as well as new technologies and new industrial sectors. Because of scale and agglomeration economies near the growth pole, regional development is unbalanced. Transportation, especially transport terminals, can play a significant role in such a process. The more dependant or related an activity is to transportation, the more likely and strong this relationship. At a later stage, the emergence of a **secondary growth pole** is possible, mainly if a secondary industrial sector emerges with its own linked industries.

**Perroux** based his theory on **Schumpeter’s** analysis of economic development. According to Schumpeter “**Economic Development occurs as a result of discontinuous spurts in a dynamic world**”. The innovative entrepreneur whose activities generally take place in large-scale firms causes such discontinuous spurts. These large scale firms are able to dominate

their environment in the sense of exercising reversible and partially reversible influences on other economic units by reason of their dimension, negotiations.

The close relationship between scale of operations, dominance and impulses to innovate became the most important features of Perroux's theory and lead to the concepts of **dynamic propulsive firm and leading propulsive industry.**

#### **Characteristics –Dynamic & leading propulsive firm**

##### **The characteristics of a dynamic propulsive firm are**

- it is relatively large
- has a high ability to innovate
- belongs to a relatively fast growing sector and
- the quantity and intensity of its interrelations with other sectors of the economy are important enough for the induced effects to be transmitted to them.

##### **The characteristics of a leading propulsive industry are also similar. Such an industry has**

- highly advanced level of technology and managerial expertise
- high income elasticity of demand for its products
- marked local multiplier effects and
- strong inter-industry linkages with other sectors

##### **The linkages created by these industries are of two types.**

###### ➤ **Backward linkage:**

An industry encourages investments in the earlier stages of production by expanding its demand for inputs (which are the outputs of industries in the earlier stages of production (e.g. Sugar Industry)

###### ➤ **Forward linkage:**

An industry encourages subsequent stages of production either by transmitting innovations or effects of innovations forward.

#### **Transmission of forward linkages:**

As a result of innovations, costs of production in the industry declined. This could lead to a fall in the price of its output. If this happens, the demand for this industry's will increase. In addition to this possibility, there are many other ways in which innovations or effects of innovations can be transmitted forward.

#### **Basis of Perroux Hypothesis**

Thus Perroux based his theory on two cornerstones

##### **1. Schumpeterian theory of development**

**(i.e. Growth does not appear everywhere and all at once; it appears in points or development poles with variable intensities; it spread along diverse channels and with varying terminal effects to the whole of the economy)**

##### **2. Theory of inter-industry linkages and industrial interdependence.**

Based on this Perroux developed his idea of economic space as a field of forces consisting of centers (or poles or foci) from which centrifugal forces emanate and to which centripetal forces are attracted.

It was **Boudeville** who gave geographic content to **Perroux's** economic space. He defined a 'growth pole' as a set of expanding industries located in an urban area and it includes further development of economic activity throughout its zone of influence. The place where these 'expanding' or 'propulsive' or 'dominant industries' are located in the region becomes the poles of the region and agglomeration tendencies are promoted.



Such tendencies arise because of external economies and result in polarization of economic activities around that pole. The external economies that become available in the area constituting the growth pole of a region are basically of the following three types.

**External Economies**

**1. Economies internal to the firm:**

These are the lower average costs of production resulting from an increased rate of output. These are the economies, which any single firm by its organization and effort can enjoy.

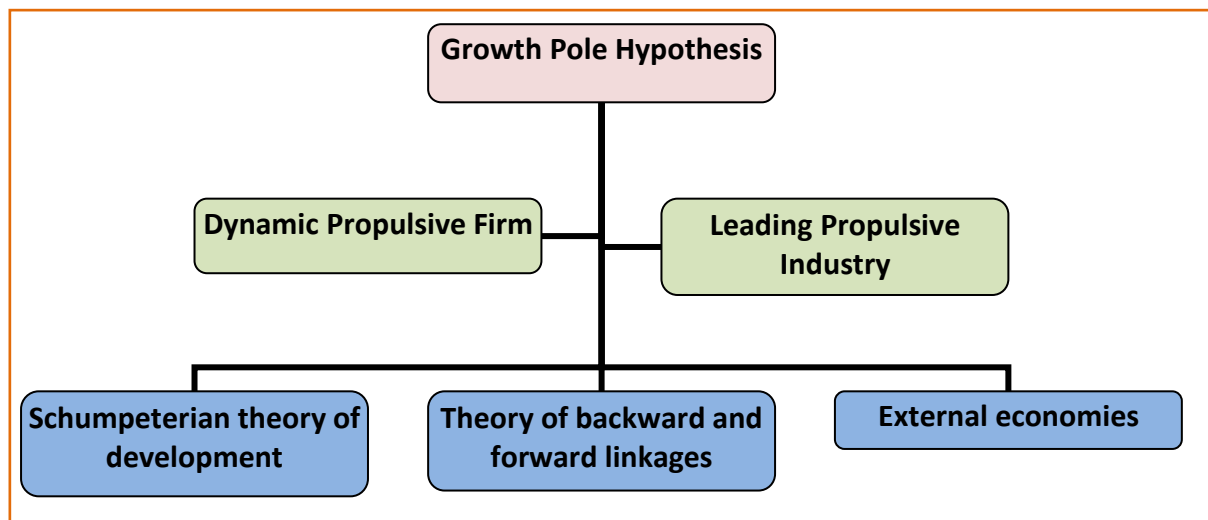
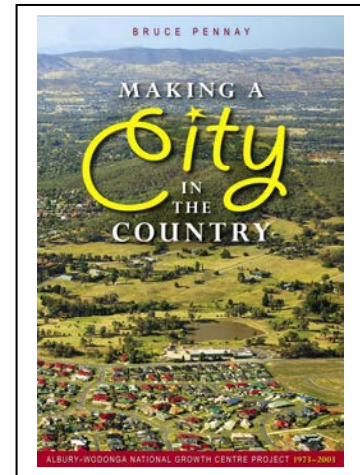
e.g. organizational efficiency and effectiveness

**2. Economies external to the firm but internal to the industry.**

These are associated with localization of industry on account of close locational proximity of linked firms, as industry expands at a particular location, cost per unit of output to a firm declines e.g., textile units at Coimbatore, match factories at Sivakasi

**3. Economic external to the industry but internal to the urban area.**

These can be termed urbanization economies. They include development of urban labour market, access to a larger market, and provision of a wide range of services.



Thus Schumpeterian theory of development, Theory of backward and forward linkages and External economies acts as a fulcrum to establish activities, industries & services in an urban area, from there emanates centrifugal forces and to which centripetal forces are attracted.

**Applicability of Growth Pole theory in Regional Planning**

Growth Pole concept has become popular because of its orientation towards ‘dynamic industry’ (i.e. dynamic propulsive firm & leading propulsive industry) ‘polarization and agglomeration’ (inter-industry linkages of external economies) and the promise of ensuring “spread effects”

Thus the growth pole theory postulates that if we carefully plan the public investment programs to be concentrated or located in a small number of favorable locations then it will have maximum spread effects on a regional growth.

Because of this, the underdeveloped countries today regard it as the most promising hope for regenerating the economy of backward areas.

To develop backward regions, one has to implant potential propulsive industries there and concentrate investments in the selected poles rather than spread them thinly over the whole region.

Even though it promotes structural imbalance over the whole region, it is justified that concentration of expansionary momentum at the poles will result in higher per capita income level in the region as a whole.

Concentration of investments and public expenditure in a few selected points will enable more effective use of resources and there would be better chance of generating enough external economies.

### **Inadequacies of the Growth Pole hypothesis**

Critics of growth pole hypothesis point out four main weaknesses.

#### **1. Inapplicability**

Growth Pole theory is inapplicable to varied regional problems. In resource rich, well populated but socially and economically backward regions, the growth policy has not been a success.

e.g. Visakapatnam Port – Shipyard as a core  
Rourkela & Bhilai – modern steel plant as core

The impact of these projects on the regional economy has, however, not been spectacular and the so called leading industry in each case failed to generate development impulses in the hinter land. Except for the physical development that happened in the area, people lead the same traditional lives as they always have. The leading industries are closely linked with distant manufacturing centers. In their immediate regional environment, there is hardly any spread effect.

Industrial centers like Durgapur, Jamshedpur etc stand as monuments of national achievement but regional failure. The ‘backwash’ process has started operating and the regions linkages with Calcutta Industrial region are closer than those with other towns in the area.

#### **2. Urban and Industrial Bias:**

Important weakness inherent in the growth pole hypothesis is its over dependence on propulsive industries in selected urban areas. It disregards other aspects of development. To expect that any large-scale industry will be able to create the socio-economic imperatives for its own growth is unrealistic.

#### **3. Functional Rigidity:**

Growth pole hypothesis is functionally rigid by emphasizing productive activities and economic opportunities created through dynamic propulsive industries. In third world countries this is not enough. Addition to this (i.e, productive activities), growth pole must function as (1) Central places (2) Innovative and growth promoting centers, (3) Social interaction points. It is therefore to get rid of functional rigidities, attached with the growth pole concept.

#### 4. Lock of Spill Over Mechanism:

##### **Growth Pole Hypothesis and Central Place Theory:**

The Growth pole theory explains the impact of propulsive industries and leading firms on regional economic development. But it is not in itself a theory of location, which explains where the functional poles are or where the most likely locations of the new poles may be. To explain this, it has to rely on the central place theory. On the other hand, the central place theory does not explain the growth phenomena; It is a static theory which only explains the existence of certain patterns of centers. It does not say how these patterns come into being and how they may undergo changes in the future. To explain these dynamic phenomena, it needs the help of the growth pole theory.

##### **R.P. Misra’s Modified Growth Foci Approach:**

Recognizing the importance of the growth pole theory in the process of regional planning and taking account of the above considerations, Misra extends the concept of growth pole to the concept of growth foci. This new concept of growth foci seeks to integrate the main elements of the central place theory, the growth pole theory and the spatial diffusion theory. The earlier version of the theory advocated the following four-tier hierarchy of growth foci.

1. Service centers at the local level.
2. Growth points at the sub – regional level
3. Growth centers at the regional level
4. Growth poles at the national level.

The later formulation envisages a five-tier hierarchy with the central village at the local level, the service centers at the micro regional level, the growth points at the sub-regional level, the growth centers at the regional level and the growth poles at the national level.

R.P. Misra notes the following three important weaknesses in the conventional growth pole theory when it is applied to conditions prevailing in underdeveloped countries.

1) The hypothesis has its roots in western economic thought where its role has been defined in terms of accelerating development through industrialization. Undue emphasis on industrialization programs introduces “functional rigidity” in the growth pole theory.

2) In undeveloped countries like India, the growth foci should not be concerned with industrial development alone. They have to perform two other basic functions: (a) they must function as service centers and meet the day-to-day needs of the area they serve (i.e. they must function as central places in the form postulated by Christaller); and (b) they must act as innovative and growth promoting centers. They must have processing and manufacturing activities of both basic and non-basic types and should be able to provide employment to the drop-outs of the agricultural system. Thus the role of growth foci is not limited to manufacturing of goods, it includes the creation of conditions under which industrial development can occur and;

3. In under developed countries, the growth foci have to function as social interaction points also. They have to act as the centers of diffusion of information. Provision of extension services, educational services and meeting places is necessary to accomplish this task”.

**Regional Planning Part III –Regional Growth Theories - Sector/Stage Theories- Export Base Model  
- Central Place Theory /Growth Pole Hypothesis/Cumulative Causation Theory**

Hierarchy of Growth Foci	Population & coverage	Nature	Facilities expected
1. Central Village	Population 6000 covering 6 villages.	Revenue village or village panchayat.	Offering marketing, recreational and social services; will have primary school, sub post office, health sub centre, primary co-operative
2. Service Centre	Population 30,000 covering 5 central villages + 5,000 population in the service centre itself; Town Panchayat	Head quarters of the extension officers, minor govt. functionaries; focal points for social intercourse	Will have grocery store general merchant shops, minor repair facilities, tailor, larger shops, restaurants, primary and middle school, sub-post office, co-operative bank, rice mill, flour mill, cinema theatre
3. Growth Points	Coverage 1.5 lakh population i.e. serving 5 service centers plus 10,000 to 25,000 population of the growth point itself municipal town or taluk head quarters.	Sub-regional innovative and propulsive urban centers; contribute to the social, economic and emotional integration of the respective sub region; linked with sister growth points by state highways and with the service centers by district/local road net works.	Will contain all the facilities located in the service centers. Over and above it will have agro industries, dairy processing units, junior college, primary level specialized medical facilities etc.
4. Growth Poles	Coverage – 10 to 12 lakhs of population; plus 50, 000 to 5,00,000 population of the growth centre it self.	There will be 500 growth centers in the country as a whole. District headquarters; acts as counter magnets to large urban centers like Bombay, Madras, Calcutta, Delhi etc.	Predominance of secondary activities; will have collecting, storage and processing facilities for agricultural products; will produce agricultural inputs such as fertilizers, pesticides, and machines; will have radio/television station, banking facilities, degree college, university, technical institutions; operation of external economies; will function as industrial hubs of the area they serve.
5. Growth Poles	Population of a growth pole ranges from 5 lakhs to 25 lakhs – It will serve a population of 20 – 30 million	Designed to serve as the ‘heart’ of one macro region of the country; state headquarters	Will send out financial technological, research and industrial impulses to all centers and points within the area of their command; will perform highly specialized secondary and tertiary activities.



The growth centre strategy was followed by erstwhile socialist countries and also by many developing countries. Even countries like France, Italy and India had their own version of growth centers. **Under the Community Development Program, the block headquarter was intended to be growth centre for rural development. Under the new industrial policy of India, the district industrial centre was to facilitate emergence of the industrial growth centers in each district.** Urban centers already exist can be converted into growth centers if better linkages are developed with the hinterland. Complementary economic activities can be made to converge at a centre. Growth centers can be developed through planning for the locational convergence of activities in their compatible combination. **However, any geographical agglomeration of activities is not automatically developmental.** There has to be appropriate mix of activities with strong linkages with the economy of the hinterland.

If some large villages and towns can serve the hinterlands with services and become nodal points of transportation network and have various types of local-resources-based industries, they can become growth centers. A growth centre should provide basic infrastructure, functions and facilities for the commercial agriculture. Growth centers should create such conditions that distress migration from rural areas is arrested.

A growth centre must have good-sized industries and/or many small-scale industrial units thriving to become growth centre. In India the structure of industries did not conform to the needs of the rural people. The vertical hierarchy of (a) growth foci/central village, (b) service centers, (c) growth points, (d) growth centers and (e) growth poles did not develop diversified industries needed for the development of the primary sector, the rural areas and the people of the hinterland. Instead of supplementing the traditional occupational skills and crafts, the industries of the growth centers often supplanted them.

**“The growth pole theory has proved to be inapplicable to developing countries marked with dual economies. The growth poles transplanted in such economies have remained poles without a deeply rooted broad base. The propulsive industries located in the poles have failed to diffuse development in the hinterland. To suit the socio-economic conditions of the developing countries, the growth pole theory has been modified and the concept of system of growth foci has been evolved. In a very limited way the concept has been accepted in several developing countries as a tool to develop backward areas and regions while at the same time integrate the traditional and modern sectors of the economy into a single whole”. R.P.Misra**

Such an extension of the growth pole theory opens up immense possibilities for the application of this theory in promoting the process of regional and national economic growth. By ensuring a linked pattern of hierarchy of human settlements, it also successfully avoids the damages of over urbanization and of depressed areas co-existing with developed areas. The problem of providing an adequate institutional infrastructure in the rural areas is also properly looked after. Adoption of this strategy leads to what Misra calls “**decentralized concentration**”.

## THE CUMULATIVE CAUSATION THEORY

### Backwash effects versus spread effects

#### Gunnar Myrdal's Theory

Noble Prizewinner in economics, **Prof. Gunnar Myrdal** has written a lot on the problems of less developed countries. His monumental book “**Asian Drama**” in three volumes and thousands of pages analyses the development process of Asian countries. Prof. Myrdal is well known for some of his theses, the main of which are



- **the Theory of Backwash Effects of International Trade,**
- **the Cumulative Causation Theory of Economic Development** and the
- **Institutional Reform Theory of Development.**

In the first two theories the causes of vicious circle of backwardness have been analyzed, while in the third we find some explicit suggestions for the development of less developed countries.

#### Part-I

#### Backwash effects of international and inter regional economic relations: spread-effects theory.

Myrdal believes that international and inter-regional economic relations in practice involve unequal exchanges in the sense that the weak are always exploited by the strong. **Belief in the competitive market benefiting all is misplaced.**

Less developed countries face three types of problems (as analyzed in the ‘backwash effects theory’).

**First, the developed countries exploit them in international economic relations.**

**Second the rich regions are also in the semi-colonial position with regard to the backward regions.**

**Third, the rich people milk the poor persons of these countries.**



International trade resulted in the immiserisation process in less developed countries. When foreigners invested in less developed countries they usually invested in plantation, mining and a few selected industries. These investments created lop-sided development in the countries because the nature of development was dualistic. These investments did not trigger off growth impulses in the hinterland.

The precious resources of the nations were drained off. The people by and large remained as backward as ever in the vicinity of big projects. The skilled personnel who worked there developed feudal and colonial approach to the development problems. These were the backwash effects of the development. Capital, skills and people moved out of backward regions to the developed regions, leaving the latter poor and dry.

The spread effects of development were just a few and disjointed or discontinuous. These spread effects were those which gave expansionary momentum from the centers of economic

expansion to other regions, and were centrifugal in nature. The main cause of economic backwardness and regional disparities has been the strong backwash effects and the weak spread effects.

Everything clustered in certain regions from art, literature, education and culture to medical facilities, science, commerce, banking, insurance, power development etc. Big cities developed in port areas. Banking system so developed that the credit-deposit ratios went against the poor regions and while deposits were collected from poor regions, credit facilities for investment was given to developed regions.

Another distressing effect of the past development pattern was that the big industries and urban centers, not only not helped the small industries or cottage industries and rural sectors but positively made them further backward. Handicraft industries died a miserable and lingering death without government support due to unhealthy competition from the developed sector. Even agriculture could not develop in these regions.

There were some spread effects from the nodal regions to the hinterland. The hinterland did supply raw materials etc, to the centers of development and in turn received consumer goods. However, these spread effects never helped in the self-expansion process in the rural areas.

The two types of effects were never in equilibrium. The position was that SPE (spread effects) > BWE (backwash effects) in developed regions while in the less developed countries or regions the BWE > SPE. Spread effects continued to become stronger in developed countries while backwash effects continued to become even more widespread in backward countries and regions. This was the type of “dynamism” in the past, and to a large extends even now between the developed and backward regions.

**In the developed regions and countries “development becomes automatic process and nothing succeeds like success”. In the backward regions and countries “poverty becomes its own cause and nothing fails like failure”.**

Another aspect of these effects is that while the income elasticity of demand for agricultural products is not high, it is pretty high for industrial products. The terms of trade, therefore, change in favour of the sector, which is already developed. When the terms of trade go against the backward sectors, they have to supply more in real terms to get the same amount of real supplies from the other sector/region/countries. This dampens the supply responses further. They cannot increase the prices and they cannot get the advantage of reducing the prices also, because of the low-income elasticity of demand.

Money earned in these sector/regions/countries is not reinvested in these very sectors but is repatriated to the developed sector, regions and countries. Increased exports from the backward sectors in the past led to inflationary pressure, increasing poverty, balance of payment difficulties, conspicuous consumption and absence of favorable multiplier effects.

There were barriers galore to the spread effects, which included the unhelpful attitude of the rich countries and regions, sectors and people and also of the governments.

**Part II**

**The cumulative causation theory of development and backwardness**

The theory of cumulative causation has been built upon the above two effects viz, the backwash effects and the spread effects. The cumulative causation theory emphasized that poverty is further perpetuated by poverty (where backwash effects overwhelm the spread effects), and affluence is further promoted by affluence, (where spread effects overwhelm the backwash effects).

**Core-Periphery Model**

**Core-Periphery Model**

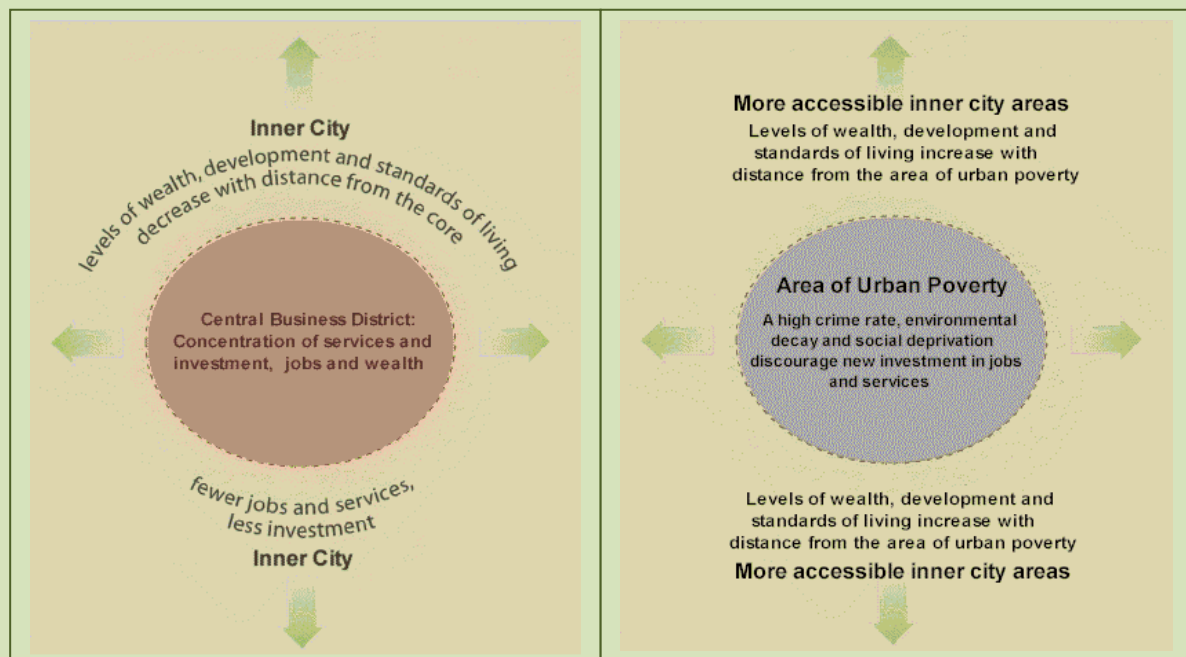
**Core-periphery theory** is based on the notion that as one region or state expands in economic prosperity, it must engulf regions nearby to ensure ongoing economic and political success. The area of high growth becomes known as the core, and the neighboring area is the periphery. Cores and peripheries may be towns, cities, states, or nations.

The Core-Periphery model (see below) helps explain why some inner city areas enjoy considerable prosperity, whilst others display all the signs of urban deprivation and poverty.

Services, investment and jobs are concentrated in the **core** Central Business District (CBD), but accessible inner city areas may benefit from a **trickle down** of wealth from the core. For example, in some areas there may be a through-flow of office workers to the inner city seeking low-price lunchtime meals. The core also provides work for inner city residents.

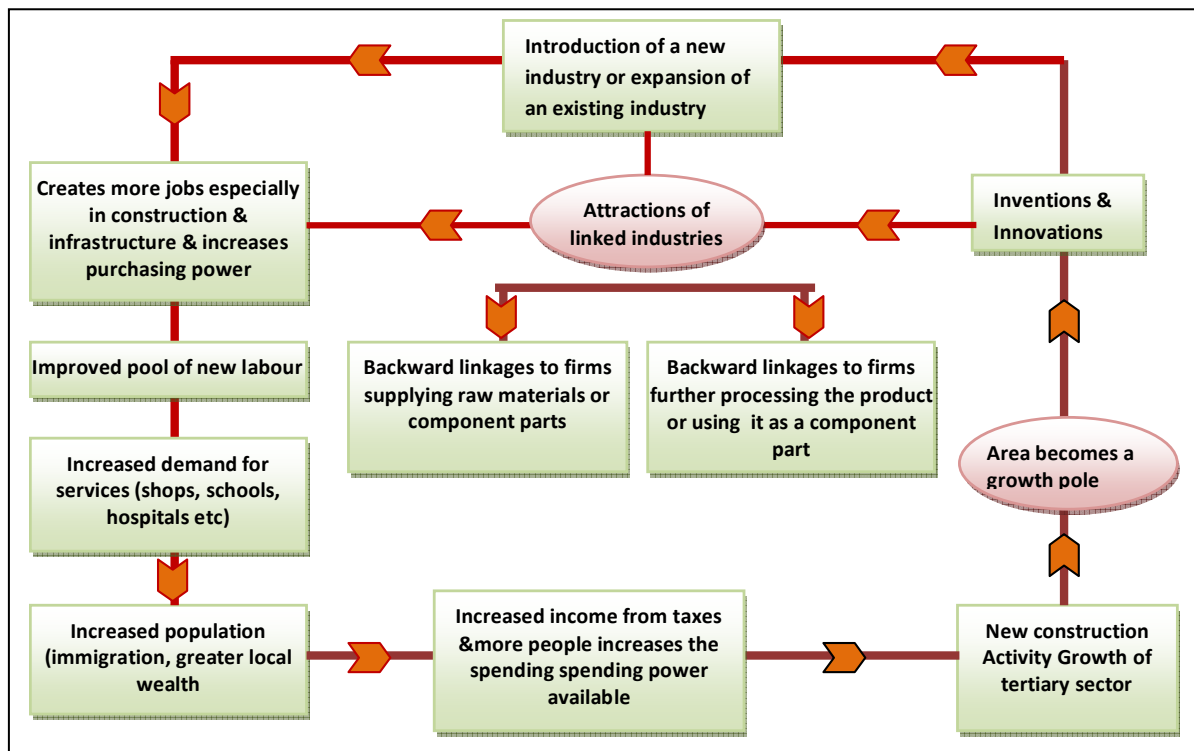
**Core-Periphery Model Spread Effects**

The development of new industry in parts of the inner city encourage the concentration of further industrial activity via 'cumulative causation' or multiplier effect as shown in the model below:



Less accessible inner city areas may experience a **backwash** effect, with the little investment that does occur in the inner city becoming concentrated close to the CBD, widening the poverty-wealth gap. This is illustrated in the diagram below, a reversal of the core-periphery model.

Myrdal wrote: “If the spread effects are sustained or accelerated further and backwash effects are resisted or rebounded back to their origin, the pace of economic development of



backward regions or class will be improved in terms of time distances. These two effects originate at the centre of economic expansion i.e. growth centers for lower order support functions and at the growth poles for higher functions. Since the two effects are counter-balanced on tangent areas of the two influence circles, it would be imperative to pressurize a positive force of changes leading to upward movement. The role of “big push” becomes obvious to break through the stagnating situation. Economic incentive to producers, in terms of differential rates of capital subsidy, market subsidy, support price, fiscal support should be granted. These would generate rebound effects on the backwash effects.”

Myrdal writes that if the rebound effects are well directed, the spread effects can develop a region. Since the spread effects gradually decline at constant rate with increase in spatial distance from the growth centre, it would be in the fitness of things to locate sub-growth centre, in such future growth potential areas. It would be of much avail to raise intensity of spread effects at point of equilibrium (rather than at existing growth centre), and thereby to extend existing zone of influence to that of other growth centers.

The ‘vicious circle’ type theory of cumulative causation emphasizes that excessive backwash effects keep a less developed country poor. Inequalities do not get reduced on their own but get accentuated. Disequilibrium causes further disequilibrium.

He writes: “The idea I want to expound is that, in the normal case, there is no tendency towards automatic self-stabilization in the social system. The system is not by itself moving towards any sort of balance between forces, but is constantly moving away from such a situation. In the normal case a change does not call forth-countervailing changes, but instead, supporting changes, which move the system in the same direction as the first change but

much further. Because of such circular causation a social process tends to become cumulative and often to gather speed at an accelerating rate.”

Thus (as we have seen if the BWE >SPE there will be cumulative causation towards poverty and vice versa), if it is intended that spread effects should overwhelm backwash effects, then state intervention (SI) effect should exceed adverse cumulative causation effects.

Myrdal contention is that **“the play of the forces in market normally tends to increase, rather than decrease, the inequality between regions”**. Once a particular region starts growing faster than the average, the “efficiency wage” in that region tends to fall. (It means that as the efficiency and productivity increase, the per unit wages–burden on the cost of production of commodities falls). This region gains comparative advantage over other regions and it becomes cumulative. This has reinforcing effects in terms of industrial development giving rise to widening regional inequality.

Myrdal’s theory is **counter-periphery model**. The favorable effects flow from the centre to the periphery. Periphery supplies raw materials and raw human power to the centre. The centre supplies the technical know-how and finished output for consumption and inputs also. Core activities are at the centre. Subsidiary activities are in the periphery area. After some time the activities in the periphery may give rise to new core regions. This new core region will become the new centre after some time. Then it will from this place that new peripheral regions will develop.

When periphery becomes the net loser the effects are backwash effects. When the centre becomes the net gainer, the effects are spread effects for the core activity region.

When the spread effects dominate, the core region develops further. In such a case there will be economic integration between the centre and the periphery, which will give rise to a more homogeneous spatial system.

When backwash effects dominate, there will be lack of complementarity and divergences will develop. Periphery will remain weak; only centre will develop and dualism in growth is promoted.

Under such circumstances, the core will continue to experience a circular upward reinforcing trend of favorable effects and the periphery will have a reverse experience.

Cumulative causation theory proves (i) that market mechanism will not bring equality between regions but will increase inequalities, and (ii) nothing short of government intervention will check the backwash effects from getting cumulative.

The process of cumulative causation starts accidentally due to “momentum of an early start” and it be just by chance. Once the growth starts, the external and internal economies bring continuous growth at the expense of other localities and regions where relative stagnation or regression becomes the opposite pattern. In backward regions there is outflow of resources, human power, and capital.

Development of infrastructure and directly productive investment brings spread effects, and they induce technical advance and all types of industries grow. “In reality, the expanding,

stagnating and regressing localities are arranged in a fairly continuous series on different levels, with all possible gradations between the extremes.

### **Part III**

#### **Getting out of the trap of cumulative causation of backwardness**

If the remedial measures are to be conceived, than naturally they will consist of removing following causes.

#### **Regulating international trade:**

If free international trade has more backwash effects, protection is called for. If market mechanism further accentuates backwardness, the government sponsored and regulated economy becomes desirable. If regional inequalities are promoted through circular causation, then the doctrine of balanced regional growth is to be advocated.

If the centre and the core are in the semi-colonial relationship with the periphery, then such development programs which provide for greater complementarity, integration and linkages are called for, all efforts are to be geared towards ending the socio-economic dualism in development in less developed countries. Myrdal goes so far as to suggest that the developed countries should now transfer funds and technical knowledge to less developed countries on mass scale so that the latter get the spread effects as compensation for the past backwash effects.

Myrdal has made many other recommendations also. He recommends promotion of capital goods and import substitution industries and also of those industries which permit simultaneous development outside the sphere of modern large-scale industry. He wants employment creation to be the main plank for poverty removal.

#### **Overcoming corruption in less developed economies.**

Lack of order, discipline, accuracy and punctuality can be witnessed as national character or at least as chronic national habit. Widespread superstitions, corruption, lack of collective leadership, inaction, lethargy and traditionalism-abound.

#### **Avoid model building approach for less developed countries.**

Models are rigorous but unrealistic. Exercises in model building are fascinating but inappropriate. They ignore social accounting. Myrdal prefers theory to a model. He rejects the one-sector model or even two-sector model for the multi-structural society.

#### **Reforms in agricultural sector:**

Myrdal rightly contends that “it is in the agricultural sector that the battle for long-term economic development in South Asia will be won or lost. He is against too much radicalism in agriculture. He wants moderate land reforms because radical land reforms take the initiative away and reduces the rise of the holdings to less than optimum limit.

#### **The need for planning:**

A new socio-economic order is to be superimposed, which should be alternative to Marxism. Myrdal’s sympathies apparently lie with planning. He does not approve subsidizing the ‘big business’ by low rates of interest, cheap rates of foreign exchange, protection from foreign competition, and low prices for services and goods from the public sector.

**Institutional Reforms:**

Myrdal laments the collusion among politicians, officials and business people in appropriating the gains of planning to themselves. Myrdal wants far reaching institutional reforms that should bring the benefits the planning to the masses that will annihilate the vested interest groups.

**Critical Evaluation**

**Appreciation**

Myrdal is internationally respected for his views. A western economist, yet he exposed the backwash effects of international trade on the poor countries and regions. Though not a communist, yet he proved that the so-called competitive markets instead of solving the problems of backward regions, sector and people accentuate them.

Myrdal theses have made important contributions to the theories of convergence and divergence, and agglomeration and locational economics and the theory of “vicious circles”. He is for balanced growth and wanted it to be initiated, directed and sustained by the government. He becomes an important supporter of the theory of sponsored growth.

The analysis part of the Myrdal’s writings is found to be much more satisfactory than the recommendatory part. He could not develop a complete theory of development, in which he could have written in details about the growth process from the start to the pinnacle.