Basic Concepts In Economics

Demand,
Supply
&
Price

Demand

Demand refers to how much (quantity) of a product or service is desired by buyers.

A demand function is a **behavior function for consumers**.

The relationship between price and quantity demanded is known as the **demand relationship.**

The quantity demanded is the amount of a product people are willing to buy at a **certain price.**

Supply

Supply *represents* **how much the market can offer**.

A supply function is a **behavior function for producers**.

The quantity supplied refers to the amount of a certain good producers are willing to supply when receiving a **certain price**.

The correlation between price and how much of a good or service is supplied to the market is known as the **supply relationship**.

Insight

- We describe market behavior using these two functions.
- The relationship between demand and supply underlie the forces behind the allocation of resources.
- Price, therefore, is a reflection of supply and demand.
- In market economy theories, demand and supply theory will allocate resources in the most efficient way possible. (How?)

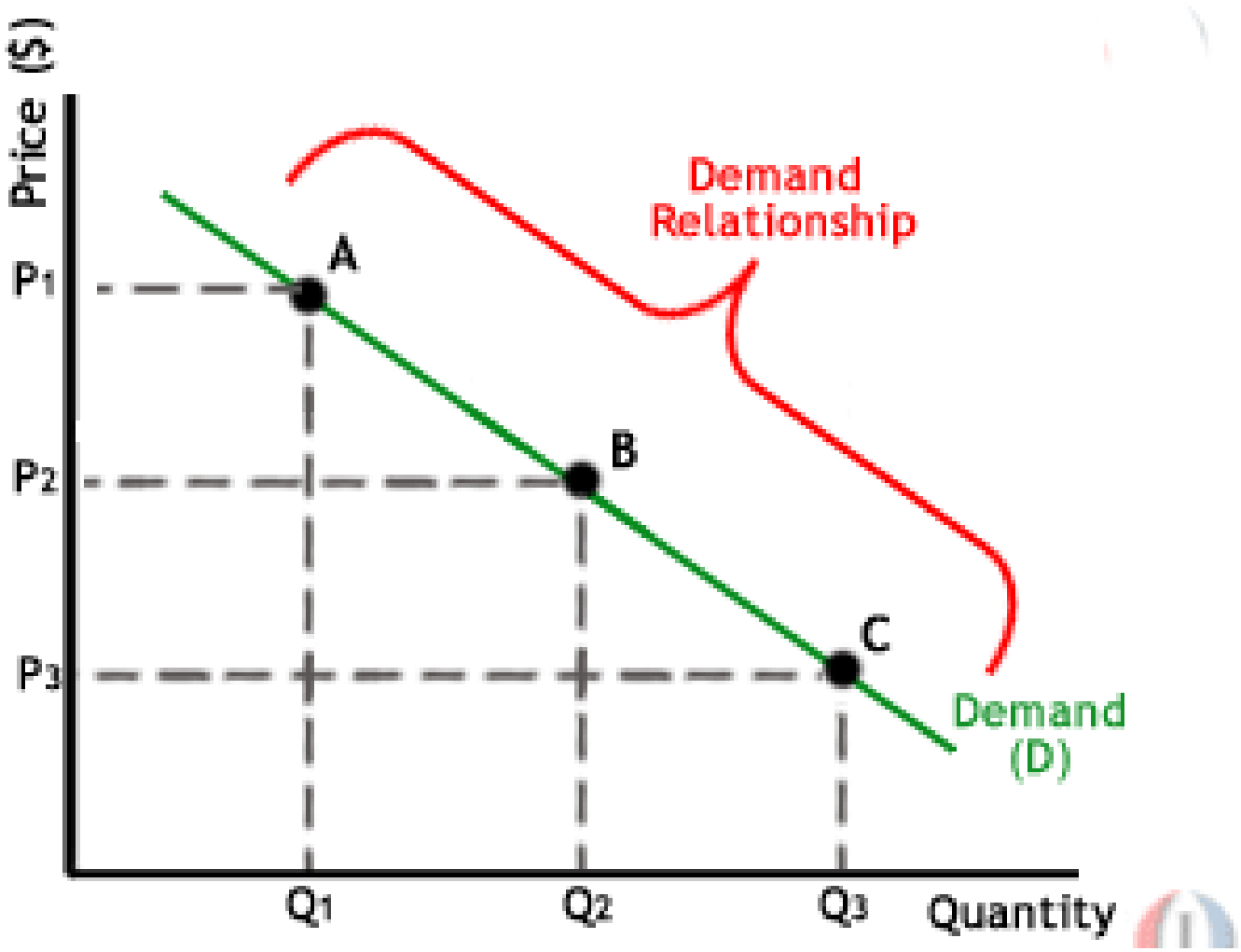
The Law of Demand

The law of demand states that, "if all other factors remain equal, the higher the price of a good, the less people will demand that good."

In other words, the higher the price, the lower the quantity demanded.

As a result, people will naturally avoid buying a product that will force them to forgo the consumption of something else they value more.

A, B and C are points on the demand curve. Each point on the curve reflects a direct **correlation between quantity demanded (Q) and price (P)**.
So, at point A, the quantity demanded will be Q_1 and the price will be P_1, and so on. The demand relationship curve illustrates the **negative relationship** between price and quantity demanded.
The higher the price of a good the lower the quantity demanded (A), and the lower the price, the more the good will be in demand (C).



$$D \propto 1/P$$

The Law of Supply

Like the law of demand, the law of supply demonstrates the quantities that will be sold at a certain price. But unlike the law of demand, the supply relationship shows an upward slope.

This means that the higher the price, the higher the quantity supplied.

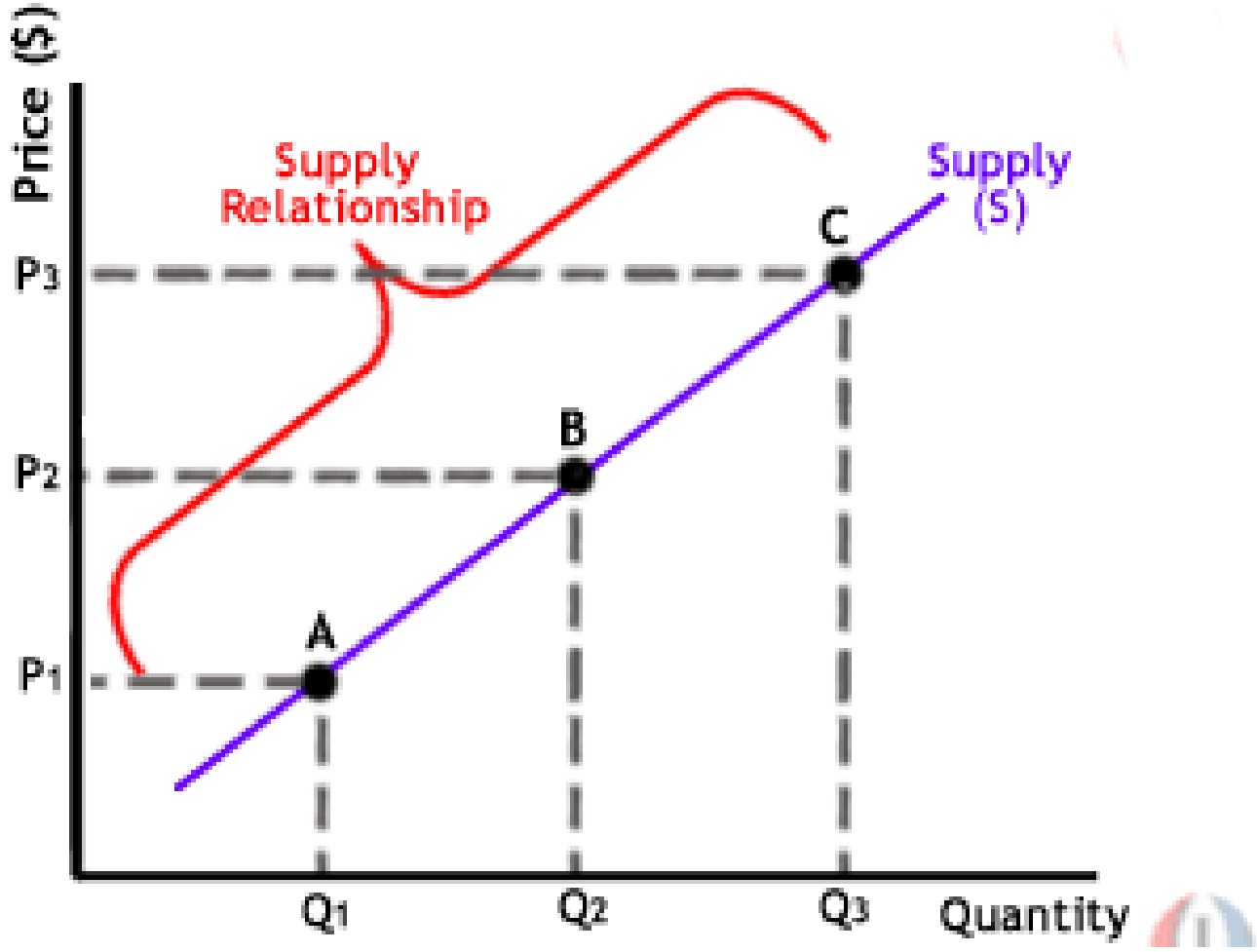
Producers supply more at a higher price because selling a higher quantity at a higher price increases revenue.

A, B and C are points on the supply curve.

Each point on the curve reflects a **direct correlation between quantity supplied (Q) and price (P)**.

At point B, the quantity supplied will be Q_2 and the price will be P_2, and so on.

$$S \propto P$$



Determinants of demand

- ✓ Own Price
- ✓ Income of the consumer
- ✓ Price of other goods-
  1 . complements 2 . substitutes
- ✓ Tastes and preferences
- ✓ Expectations of future prices
- ✓ Advertising
- ✓ Distribution of income

Determinants of Supply

- ✓ Price
- ✓ Cost of production
- ✓ Technological progress
- ✓ Prices of related outputs
- ✓ Govt. policy

All factors other than price cause a shift of the supply curve and is called a change in supply

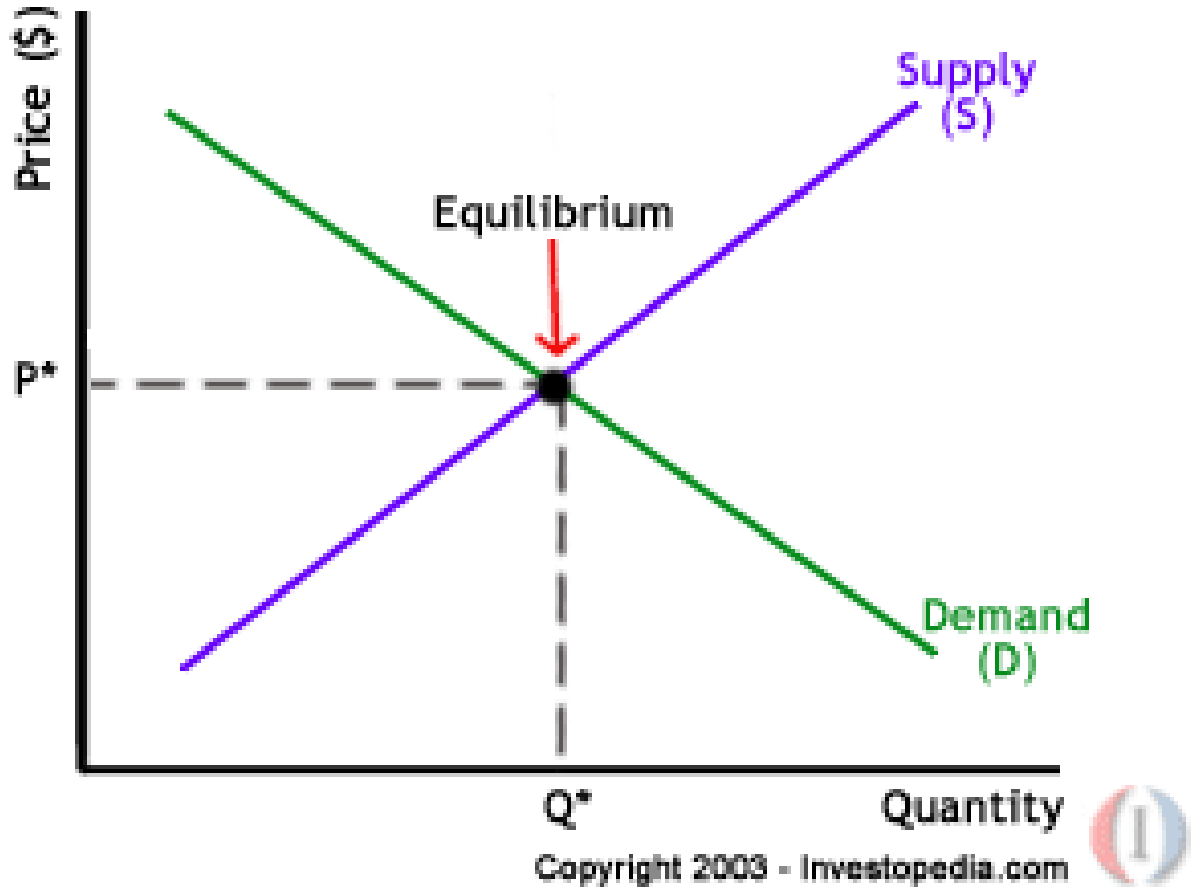
When supply and demand are equal (i.e. when the supply function and demand function intersect) the economy is said to be at equilibrium.

Equilibrium

At this point, the **allocation of goods is at its most efficient** because the amount of goods being supplied is exactly the same as the amount of goods being demanded.

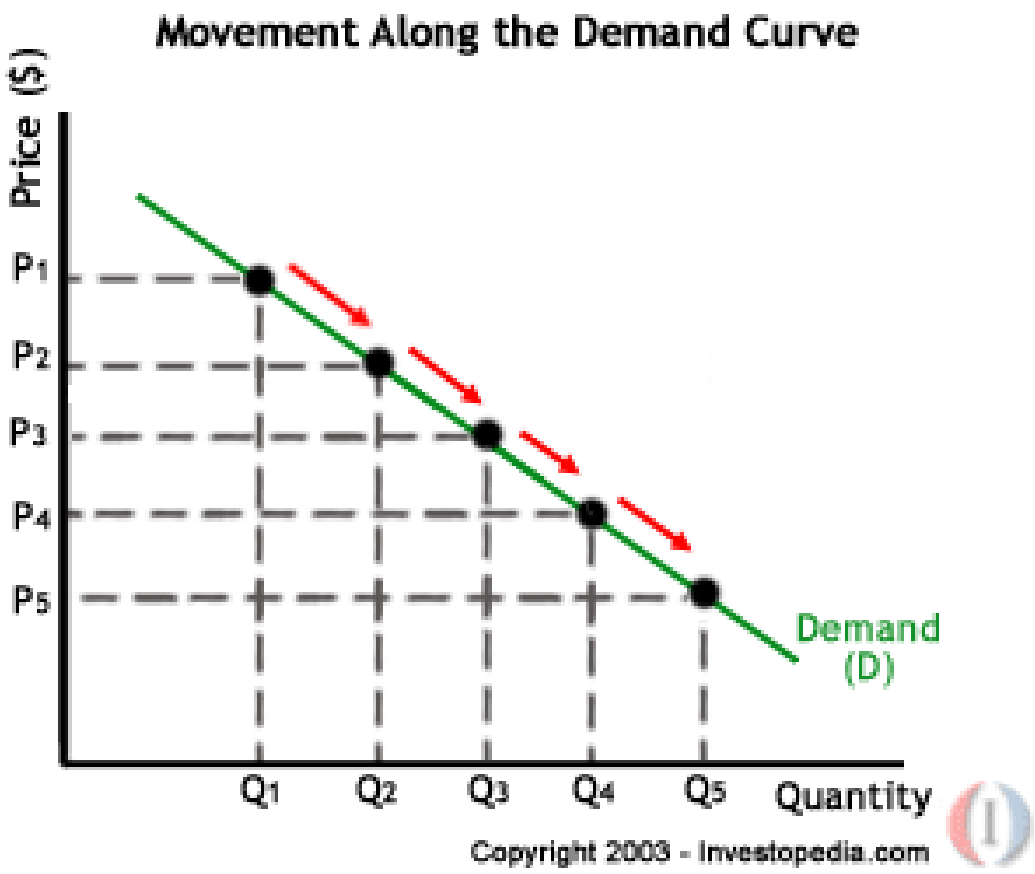
Thus, **everyone (individuals, firms, or countries) is satisfied** with the current economic condition.
At the given price, suppliers are selling all the goods that they have produced and consumers are getting all the goods that they are demanding.

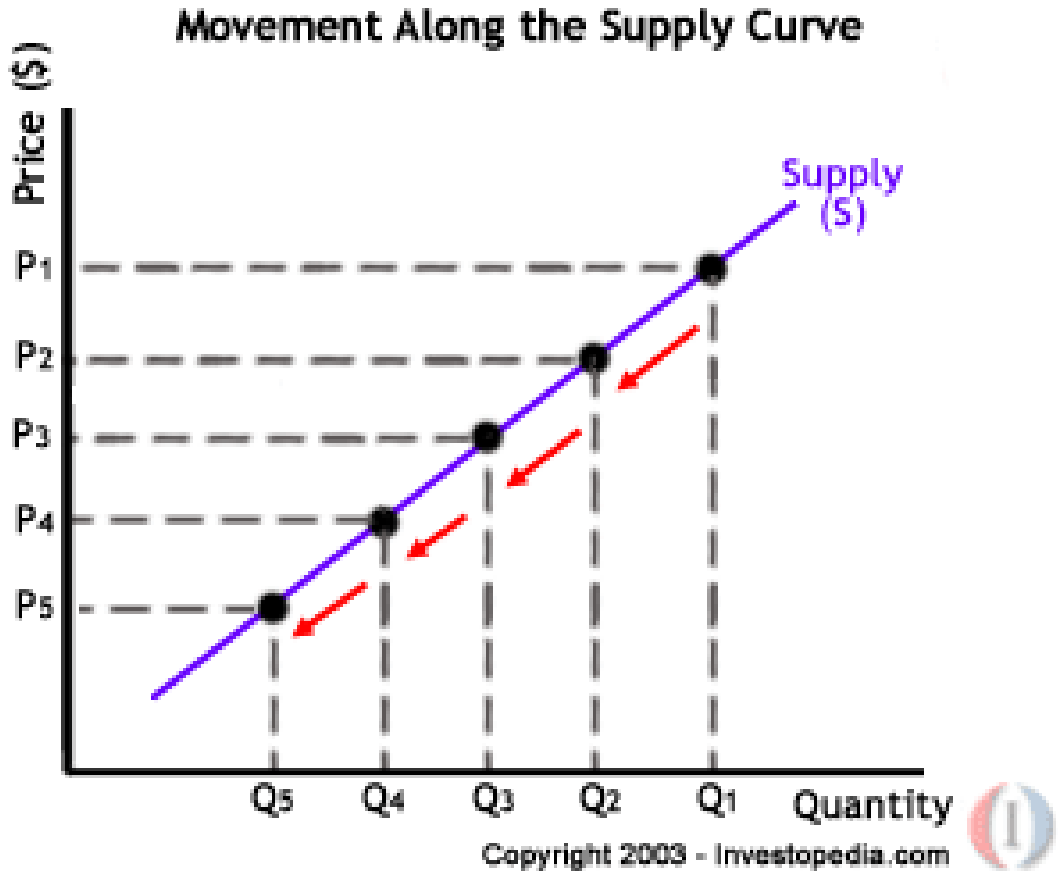
As you can see on the chart, **equilibrium occurs at the intersection of the demand and supply curve, which indicates no allocative inefficiency**.
At this point, the price of the goods will be P* and the quantity will be Q*. These figures are referred to as equilibrium price and quantity.



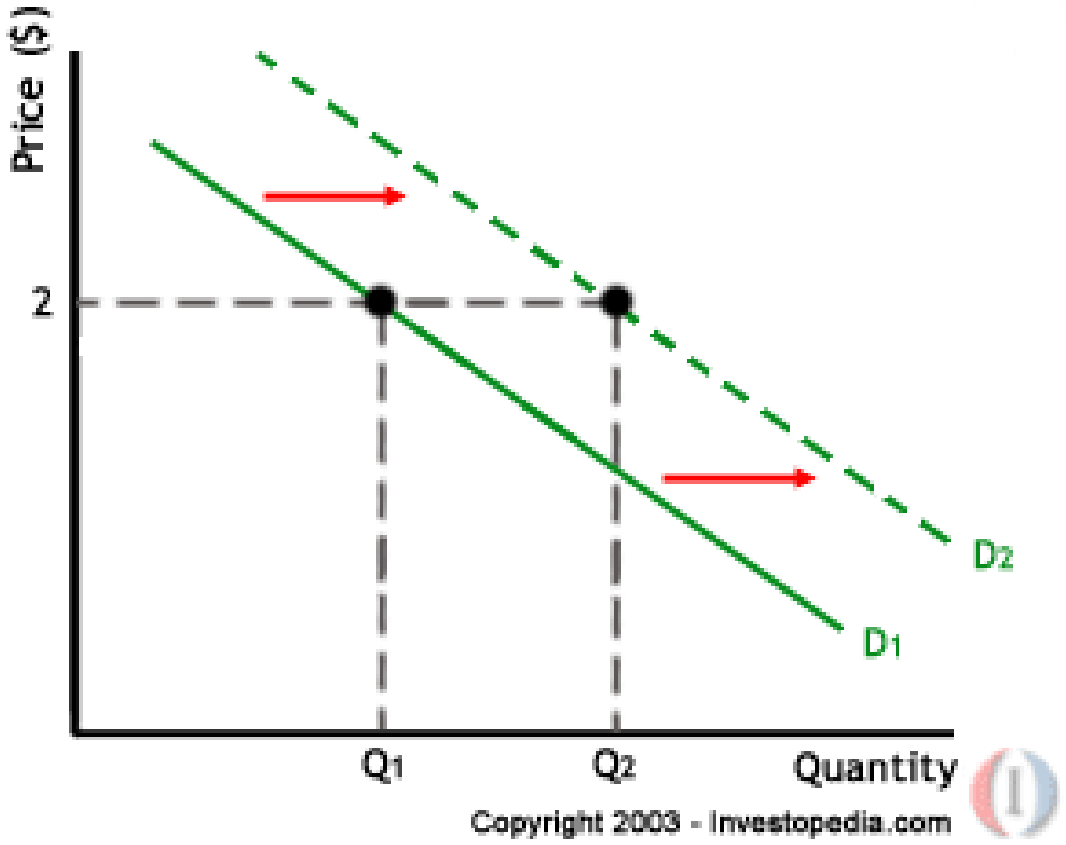
In the real market place equilibrium can only ever be reached in theory, so the prices of goods and services are constantly changing in relation to fluctuations in demand and supply.

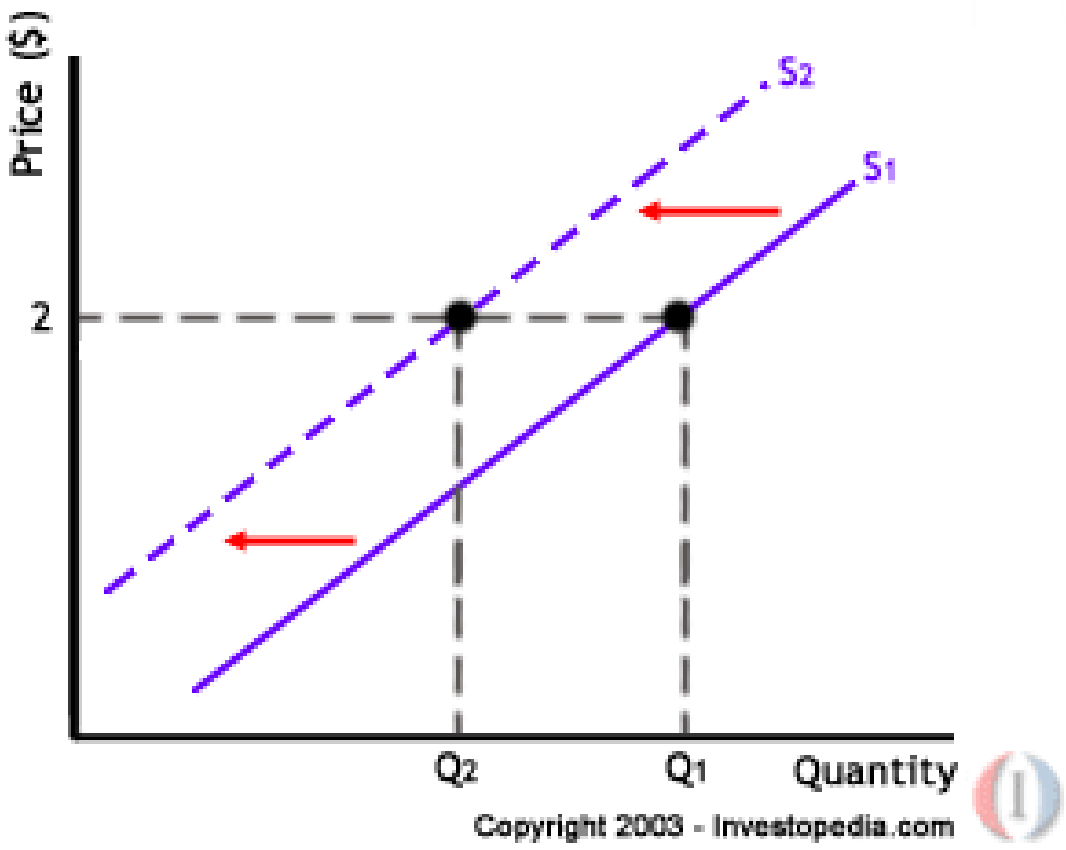
'Movement' in curves





'Shift' in curves





Total Cost

In economics, the total cost (TC) is the total economic cost of production.
It consists of variable costs and fixed costs.

Fixed Costs

- ✓ Fixed costs (FC) are incurred **independent of the quality of goods or services produced.**
- ✓ They include inputs (capital) that **cannot be adjusted in the short term,** such as **buildings and machinery**.
- ✓ Fixed costs (also referred to as **overhead costs**) tend to be time related costs, including **salaries** or **monthly rental fees**.
- ✓ However, **fixed costs are not permanent**. They are only fixed in relation to the quantity of production **for a certain time period**.

In the long run, the cost of all inputs is variable.

Variable Costs

- ✓ Variable cost (VC) changes according to the **quantity of a good or service being produced**.

A cost that changes with the change in volume of activity of an organization.

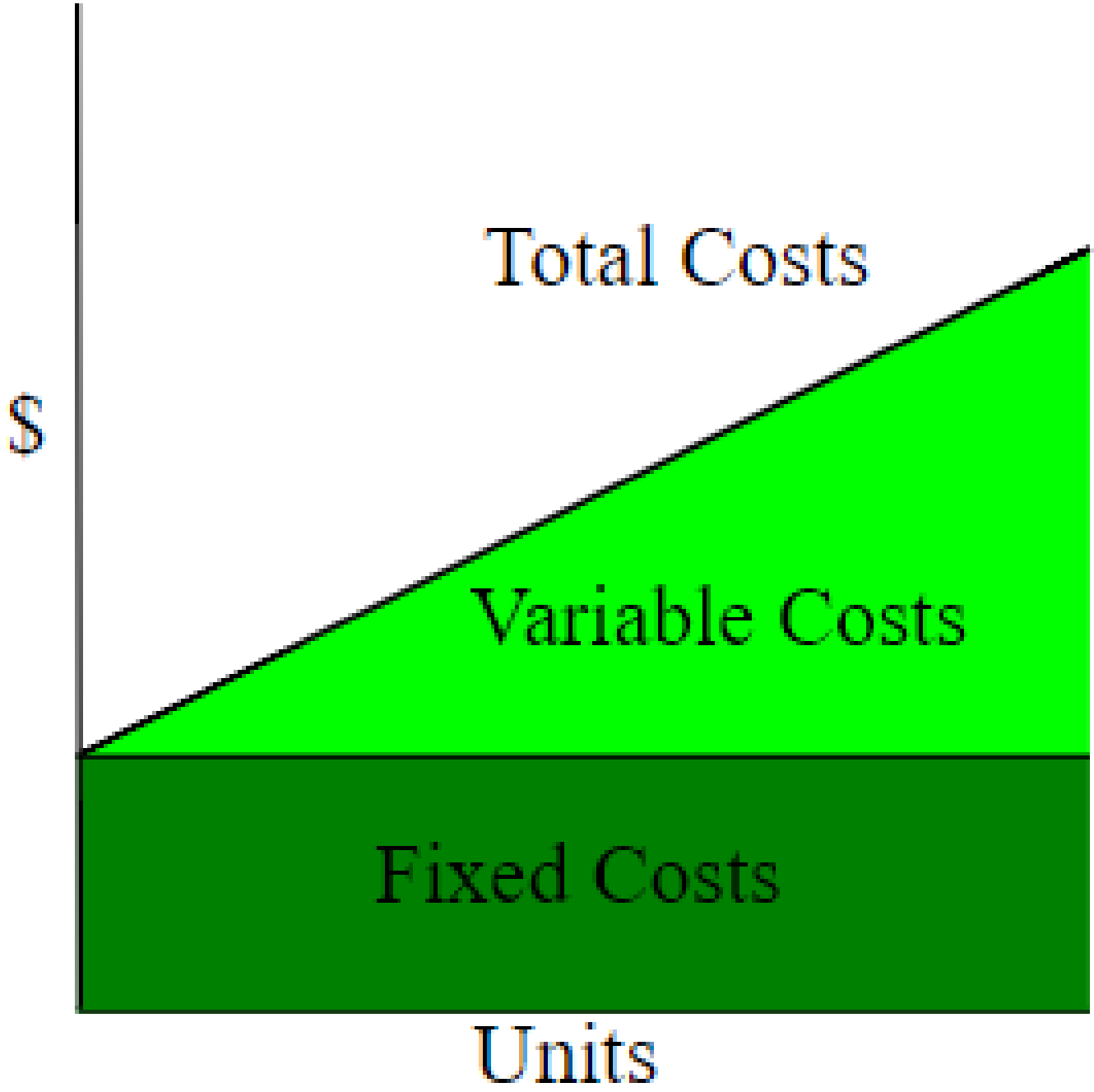
- ✓ It includes inputs like **labor** and **raw materials**.

- ✓ Variable costs are also the sum of marginal costs over all of the units produced (referred to as normal costs).

Calculating total cost:

This graphs shows the relationship between fixed cost and variable cost.

The sum of the two equal the total cost.



Average Cost

- ✓ **The average cost is the total cost divided by the number of goods produced**
- ✓ **Average total cost is the sum of average variable cost and average fixed cost.**

Or we can say, average cost is equal to the total cost divided by the number of units produced.

$$ATC = TC/Q$$

- ✓ Average cost can be **influenced by the time period for production** (time-dependent).
- ✓ Average costs are the **driving factor of supply and demand** within a market.

Marginal Costs

- ✓ **Marginal cost is the addition made to the total cost by producing one additional unit of output.**
- ✓ **Marginal cost = Total cost of nth unit - Total cost of (n-1)th unit.**
- ✓ Marginal cost can also be defined as the **change in total cost (ΔTC) due to change in quantity produced(Δq).**
- ✓ The amount of marginal cost varies according to the **volume of the good** being produced.

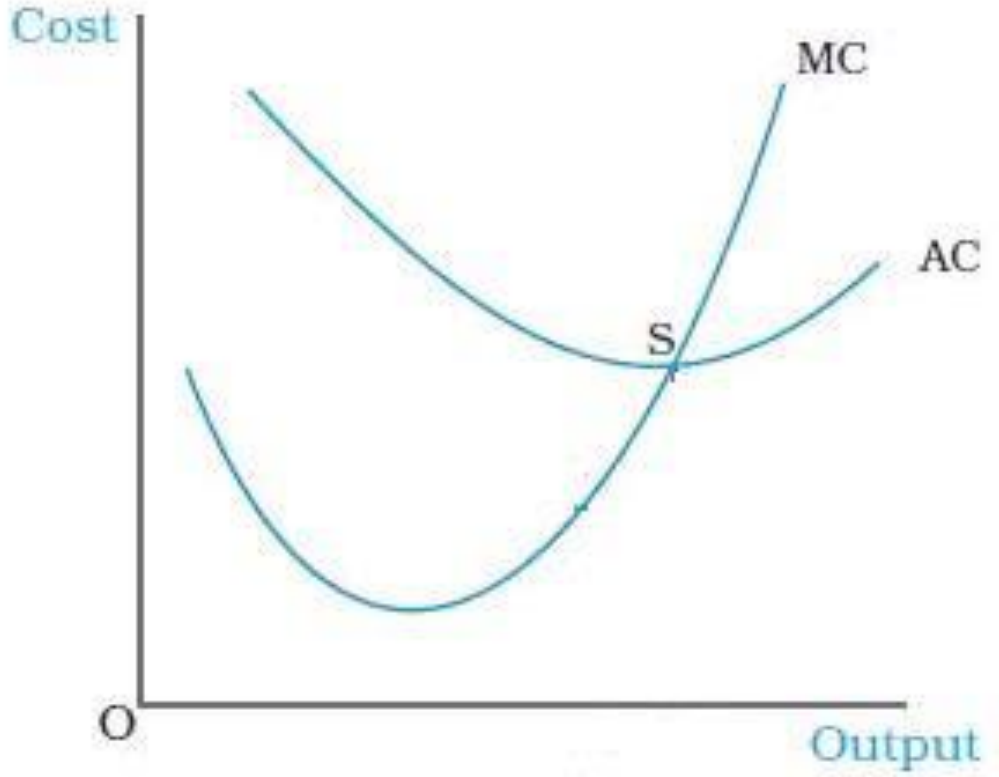
Relationship between Marginal Cost and Average Total Cost

1. Whenever marginal cost is less than average cost, average total cost is falling.

2. Whenever marginal cost is greater than average cost, average total cost is rising.

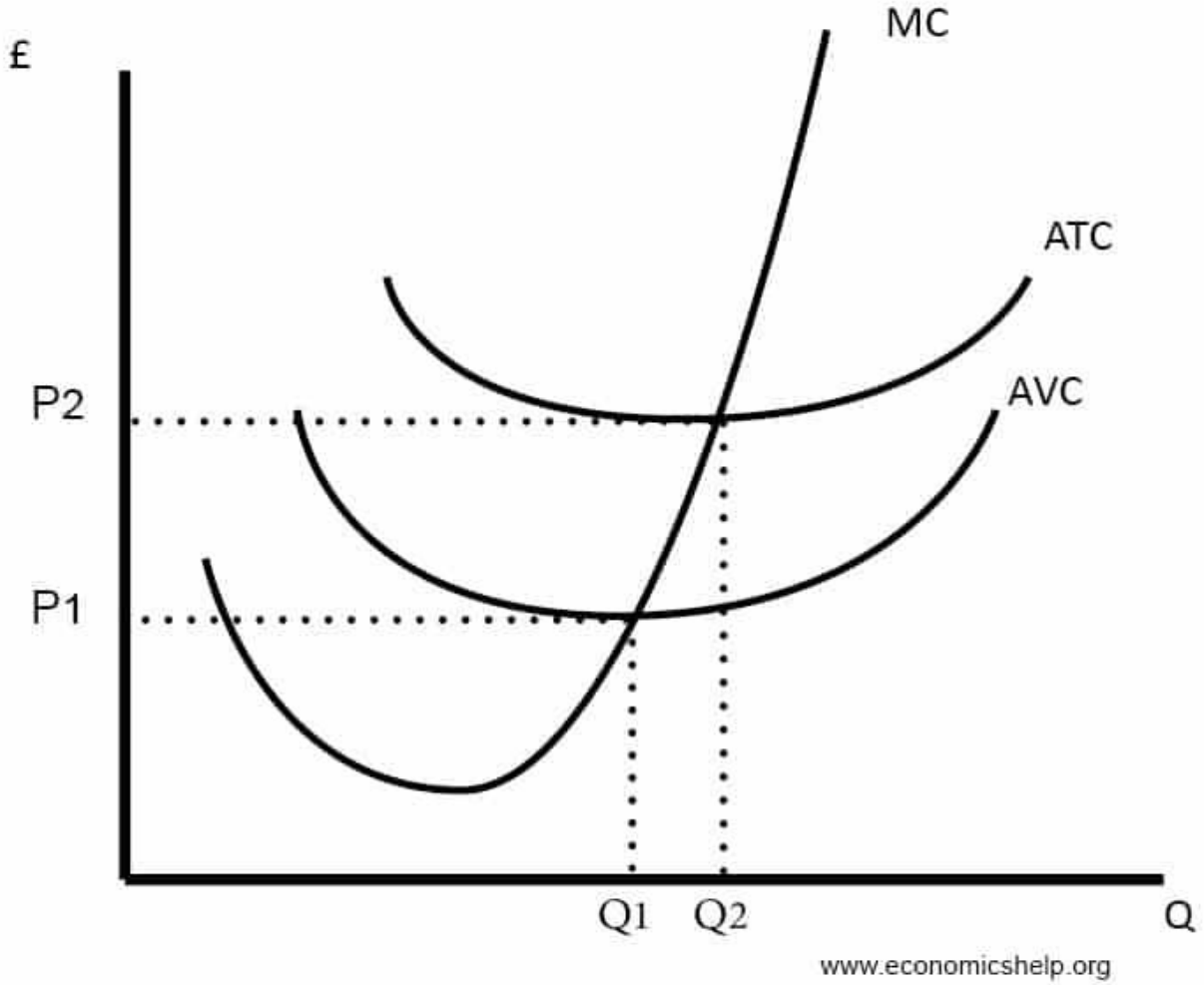
3. The marginal-cost curve crosses the average-total-cost curve at the efficient scale.

Industrialist can increase the production upto this S point only



§ Efficient scale is the quantity that minimizes average total cost(point S in above diagram)

Cost curves



- ATC (Average Total Cost) = Total Cost / quantity
- AVC (Average Variable Cost) = Variable cost / quantity
- MC = Marginal cost.

Three Important Properties of Cost Curves:

1. Marginal cost eventually rises with the quantity of output.
2. The average-total-cost curve is U-shaped.
3. The marginal-cost curve crosses the average-total-cost curve at the minimum of average total cost

More to learn

https://courses.lumenlearning.com/boundless-economics/chapter/production-decisions-in-perfect-competition/

Thank You

Economies of Scale

Concept

- Economies of scale is the **competitive advantage** that large entities have over smaller ones.
- The larger the business, the lower its per-unit costs. It can spread fixed costs, like administration, over more units of production.

When more units of a good or a service can be produced on a larger scale, yet with (on average) fewer input costs, economies of scale are said to be achieved.

According to this theory, economic growth may be achieved when economies of scale are realized.

- Economist **Adam Smith** identified the **division of labor** and **specialization** as the two key means to achieving a **larger return on production**. Through these two techniques, employees would not only be able to concentrate on a specific task but with time, improve the skills necessary to perform their jobs.
- The **tasks could then be performed better and faster.** Hence, through such **efficiency, time and money** could be **saved** while **production levels increased.**

Economies of Scale

$2 per unit

$1.50 per unit

$1 per unit

BIGGER IS OFTEN CHEAPER!

Inputs in an industry

- In addition to specialization and the division of labor, within any company, there are various inputs that may result in the production of a good and/or service:
  - ✓ Lower input costs
  - ✓ Costly inputs
  - ✓ Specialized inputs
  - ✓ Techniques and Organizational inputs
  - ✓ Learning inputs

Types of Economies of Scale

There are **two** main types of economies of scale:

Internal economies

External economies

Internal economies are **controllable by management** because they are internal to the company.

External economies depend upon external factors. These factors include the **industry, geographic location, or government**.

Internal Economies of Scale **आन्तरिक बचतें**

- Internal economies are a result of the sheer **size of the company**. It doesn't matter what industry it's in or market it sells to.
- बड़े पैमाने के उत्पादन की आन्तरिक बचतें उद्योग के भीतर ही प्राप्त होती हैं।
- Acc. to Alfred Marshall *"आन्तरिक बचतें वे हैं जो किसी एक फर्म को उसकी आन्तरिक कुशलता तथा व्यवस्था, विस्तार आदि की श्रेष्ठता के कारण होती हैं।"*
- For example, **large companies have the ability to buy in bulk**. This **lowers the cost per unit of the materials** they need to make their products. They can use the savings to increase profits. Or, they can pass the savings to consumers and compete on price.

Internal Economies of Scale आन्तरिक बचतें...

There are **five** main types of internal economies of scale:

1. **Technical Economies**
2. **Managerial Economies**
3. **Financial economies**
4. **Marketing economies**
5. **Risk Bearing Economies**

Internal Economies of Scale…

Technical Economies:

- When production is carried on a large scale, a firm can **afford to install up to date and costly machinery** and can have its **own repairing arrangements**.
- **Technical economies** of scale result from **efficiencies in the production process itself**.

Manufacturing costs fall 70-90 percent every time the business doubles its output.

Larger companies can take advantage of more efficient equipment.

Internal Economies of Scale…

Managerial Economies: प्रबन्धकीय बचतें

- When production is carried on a large scale, the task of manager can be split up into different departments.
- A large firm can also **secure the services of experienced entrepreneurs** and workers which a small firm cannot afford.

1. **कार्यों को सौंपना (Delegation of work)** - इसमें व्यवसाय का मालिक छोटे मोटे कई कार्य अन्य सहायकों को सौंपकर अपना सम्पूर्ण ध्यान महत्त्वपूर्ण निर्णयों में लगा सकता है;
2. **कार्यात्मक विशिष्टीकरण (Functional specialization)** - प्रबन्ध का कार्य कई विभागीय प्रबन्धकों को सौंपा जा सकता है और एक विभाग के कार्य को भी कई उप- विभागों में बॉटा जा सकता है।

- In a large establishment there is much scope for specialization of work

Internal Economies of Scale…

- Financial economies (वित्तीय बचतें) of scale means the company has cheaper access to capital (कंपनी की पूंजी तक सस्ती पहुंच). A larger company can get funded from the stock market with an initial public offering.
- **Big firms have higher credit ratings**. बड़ी फर्मों की साख होने से क्रेडिट रेटिंग अधिक होती है। As a result, they benefit from **lower interest rates on** (कम ब्याज दरों से लाभान्वित) their bonds.
- **Network economies of scale** occur primarily in online businesses. It costs almost nothing to support each additional customer with existing infrastructure. So, any revenue from the new customer is all profit for the business. A great example is **Amazon**.

Marketing Economies: बिक्री सम्बन्धी बचतें

Marketing economies refer to those economies which a firm can secure from the **purchase or sale of the commodities**.

- A large establishment is in a better position **to buy the raw material at a cheaper rate** because it can buy that commodities on a large scale.
- At the time of selling the produced goods, the firm can secure better rates by effectively **advertising in the newspapers, journals and radio, etc.**

Risk Bearing Economies: जोखिम से सम्बन्धित बचतें

- A big firm can undertake **risk bearing economies by spreading the risk (जोखिमों का फैलाव)**.
- A big establishment **produces a variety of goods** in order to cater the needs of different tastes of people.
- If the demand for a certain type of commodities slackens, it is counter balanced by the increase in demand of the other type of commodities produced by the firm.

Internal Economies of Scale achieved

External Economies of Scale बाह्य बचतें

- **External economies of scale** *occur* **outside of a firm, within an industry.** *These accrue to all the firms in an industry as the industry expands.*
- **जब कभी एक फर्म की उत्पत्ति में वृद्धि होने से अन्य फर्मों की कार्यकुशलता पर अनुकूल प्रतिक्रया होती है, चाहे ये फर्में उसी उद्योग की हों अथवा अन्य उद्योगों की हों, तो इन फर्मों को बाह्य बचतों का लाभ हुआ माना जाता है।**

- The main external economies are as under:

1. **Economies of localization/ concentration: केन्द्रीयकरण की बचतें**

   When an industry is **concentrated in a particular area**, all the firms situated in that locality avail of some common economies such as

   a) Skilled labor
   b) Transportation facilities
   c) Telecommunication facilities
   d) Banking and insurance facilities etc.

External Economies of Scale…

2. **Economies of vertical disintegration** विधटन की बचतें :
   - The vertical disintegration implies the splitting up the production process in such a manner that some Job are **assigned to specialized firms.**
   - For example, when an industry expands, the repair work of the various parts of the machinery is taken up by the various firms specialists in repairs.

External Economies of Scale …

3. **Economies of information:**

   As the industry expands it can ***set up research institutes***. The research institutes provide **market information**, **technical information** etc. for the benefit of alt the firms in the industry.

4. **Economies of by products:**

   All the firms can lower the costs of production by **making use of waste materials**.

Returns to Scale पैमाने के प्रतिफल

Returns to scale *explains* **how the rate of increase in production is related to the increase in inputs in the long run**.

- There are **three stages** in the returns to scale:

1. Increasing returns to scale (IRS),
2. Constant returns to scale (CRS), and
3. Diminishing returns to scale (DRS).

Returns to scale vary between industries, but typically a firm will **have increasing returns to scale at low levels of production, decreasing returns to scale at high levels of production, and constant returns to scale at some point in the middle.**

Increasing Returns to Scale (IRS)
पैमाने के वृद्धिमान प्रतिफल

The first stage, increasing returns to scale (IRS) refers to a **production process** where an **increase in the number of units produced** causes a **decrease in the average cost** of each unit.

यहाँ उत्पादित इकाइयों की संख्या में वृद्धि प्रत्येक इकाई की औसत लागत में कमी का कारण बनती है।

Increasing Returns to Scale (IRS)

In other words, a firm is experiencing IRS when **the cost of producing an additional unit of output decreases** as the volume of its production increases.

जब उत्पादन की मात्रा बढ़ने से एक अतिरिक्त इकाई के उत्पादन की लागत घट जाती है।

अर्थात् जब उत्पादन के सभी साधनो के बढ़ने से उत्पादन अनुपात से अधिक बढता है तो वे पैमाने के वद्धिमान प्रतिफल माने जाते हैं। जैसे उत्पादन के सभी साधनों को दुगुना करने से उत्पाद दुगुने से अधिक हो जाता है तो यह पैमाना का वृद्धिमान प्रतिफल कहलाता है जिससे प्रति इकाई लागत कम हो जाती है और आगे भी कम होती जाती है।

Constant Return to Scale (CRS)

The **second stage**, **constant returns to scale** (CRS) refers to a **production process where an increase in the number of units produced causes no change in the average cost of each unit.** If output changes proportionally with all the inputs, then there are constant returns to scale.

- जहां उत्पादित इकाइयों की संख्या में वृद्धि से प्रत्येक इकाई की औसत लागत में कोई बदलाव नहीं होता है।
- उपज और निवेश में आनुपातिक वृद्धि।

Diminishing Return to Scale (DRS)

- The **final stage**, **diminishing returns to scale** (DRS) refers to **production** for which the **average costs of output increase as the level of production increases.**
- यहाँ उत्पादन का स्तर बढ़ने के साथ उत्पादन की औसत लागत बढ़ जाती है।
- The DRS is the opposite of the IRS.

Workers (Input)	Pizza (Output)	Marginal Product
0	0	
1	5	
2	15	
3	20	
4	22	
5	21	
6	18	

Workers (Input)	Pizza (Output)	Marginal Product
0	0	-
1	5	5
2	15	10
3	20	5
4	22	2
5	21	0
6	18	-4

Stage I: production is increasing because of specialization

Stage II: production is increasing but at a decreasing rate due to fixed resources

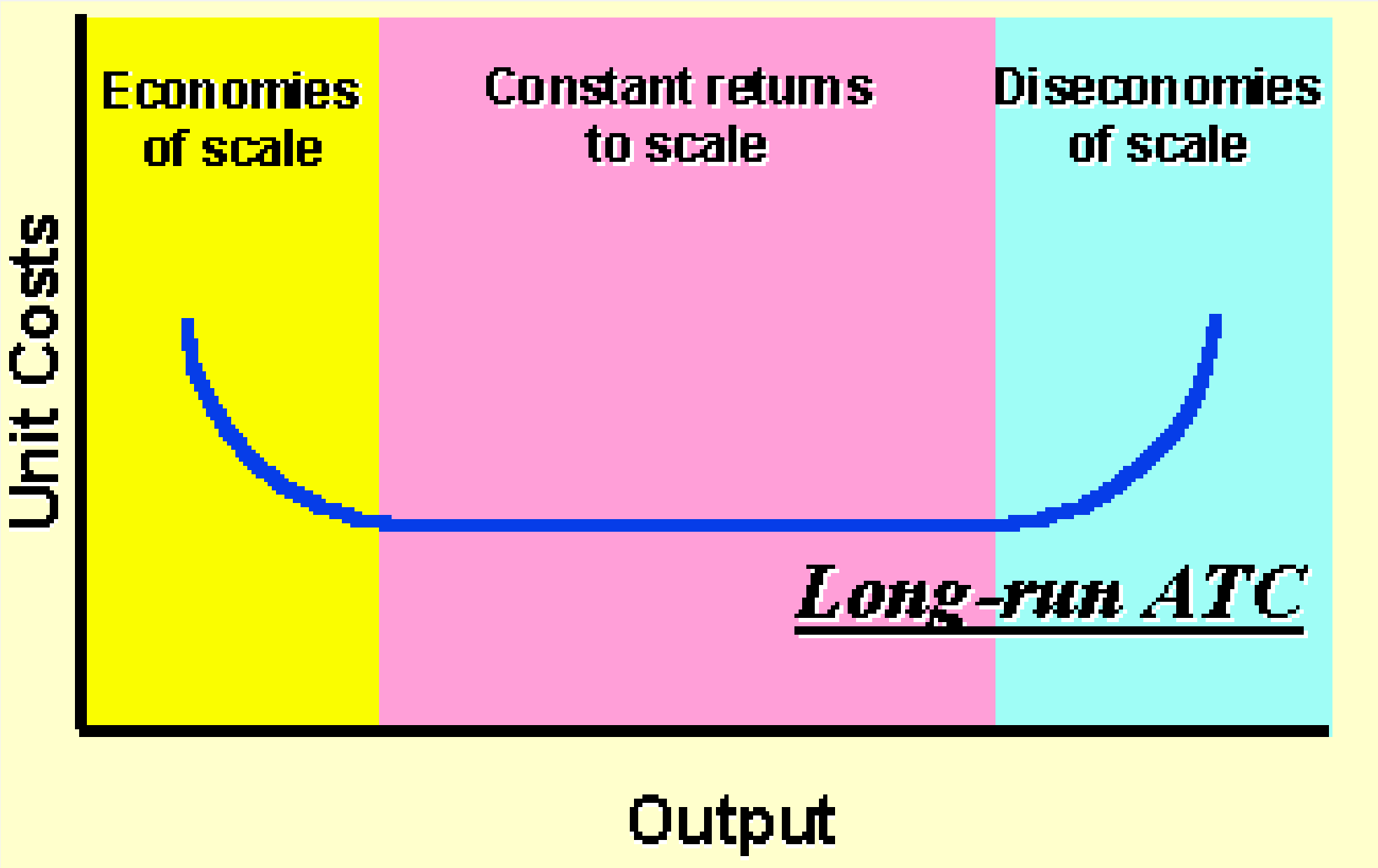
Stage III: production is decreasing "way too many cooks in the kitchen……chaos"

Input is Doubled

1. Increasing Returns

2. Constant Returns

3. Diminishing returns


Economies of scale
Constant returns to scale
Diseconomies of scale
Unit Costs
Long-run ATC
Output

Diseconomies of Scale

- Just like there are economies of scale, diseconomies of scale also exist. **This occurs when production is less than in proportion to inputs.**
- What this means is that there are **inefficiencies** (अक्षमताएं) **within the firm or industry** **resulting in rising average costs**.
- A firm or an industry cannot avail of economies for an indefinite period of time. With the expansion and growth of an industry, certain disadvantage also begin to arise.

Types

1. Diseconomies of pollution प्रदूषण की विसंगतियां
2. Excessive pressure on transport facilities परिवहन सुविधाओं पर अत्यधिक दबाव
3. Rise in the prices of the factors of production उत्पादन के कारकों की कीमतों में वृद्धि
4. Scarcity of funds निधियों की कमी
5. Marketing problems of the products उत्पादों की विपणन समस्याएं
6. Increase in risks जोखिमों में वृद्धि

Allen Pred

The Behavioural School

Introduction

- Allen Pred's theory (**1967**) is based on behavioural approach.
- The behavioural approach draws on a human being as a **satisfier**.
- Allen Pred published his theory entitled '***Behaviour and Location***' in which he devised a **behavioural matrix** to illustrate an analysis of locational decisions.
- The **least cost** and **market area** theories are **profit maximizing** theories which assume that **all firms seek optimal locations and it uses the concept of *rational, economic* man as a basis for decision making.**
- Behavioural approach, in contrast, stresses that ***real world decisions are rarely optimal***.

- Unlike economic man, **real man lacks perfect knowledge and ability**, and, therefore, his locational decisions must reflect these concerns.
- Even if he knew where maximum profits could be obtained, he is unlikely to choose an economically optimal location. (WHY)
- More probably he is likely to choose the location which gives **sufficient profit at least effort**.
- **In fact, he is a *satisfier***.
- **A businessman is prepared to accept a satisfactory location rather than economically the best location.**
- He may even prefer to forgo some profits in order to locate in a place that is especially amenable - in a pleasant climate, at the coast, or near his favorite city.

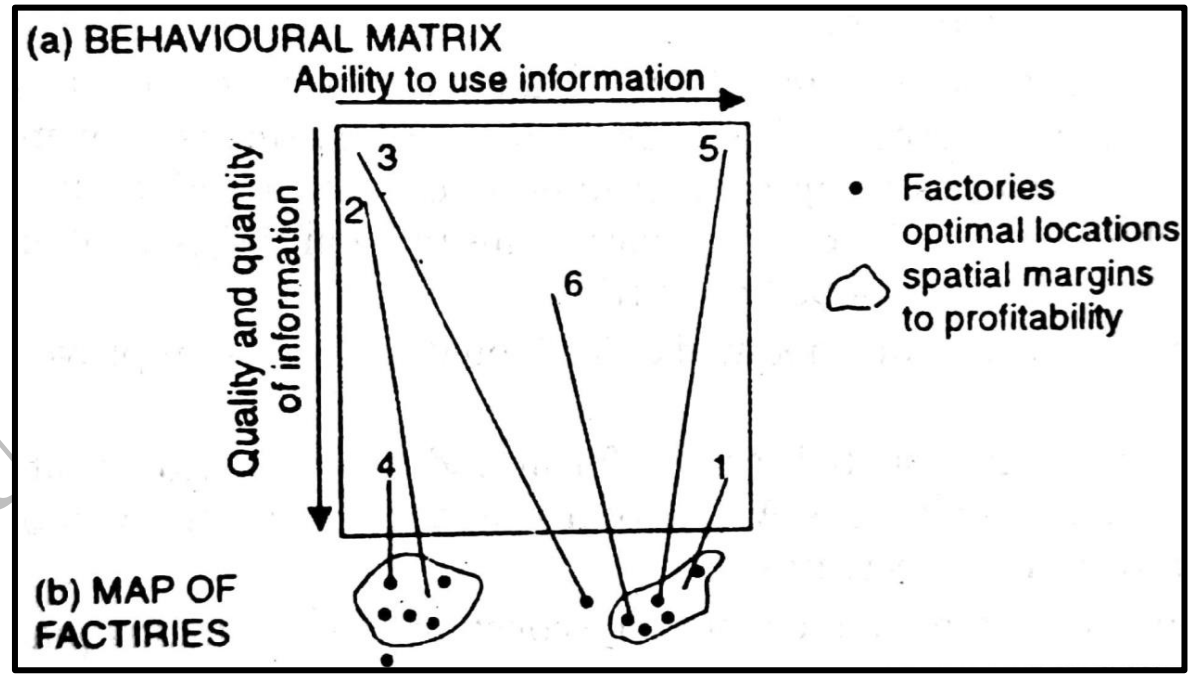
Pred suggested that effectiveness in decision making is related to information available and the ability to use it.

These factors are closely connected to human nature and **form the axes of his matrix** described as an operational environment.

Using this matrix, *locations within the spatial margins can be analyzed*.

The matrix offers a **bivariate** graph.

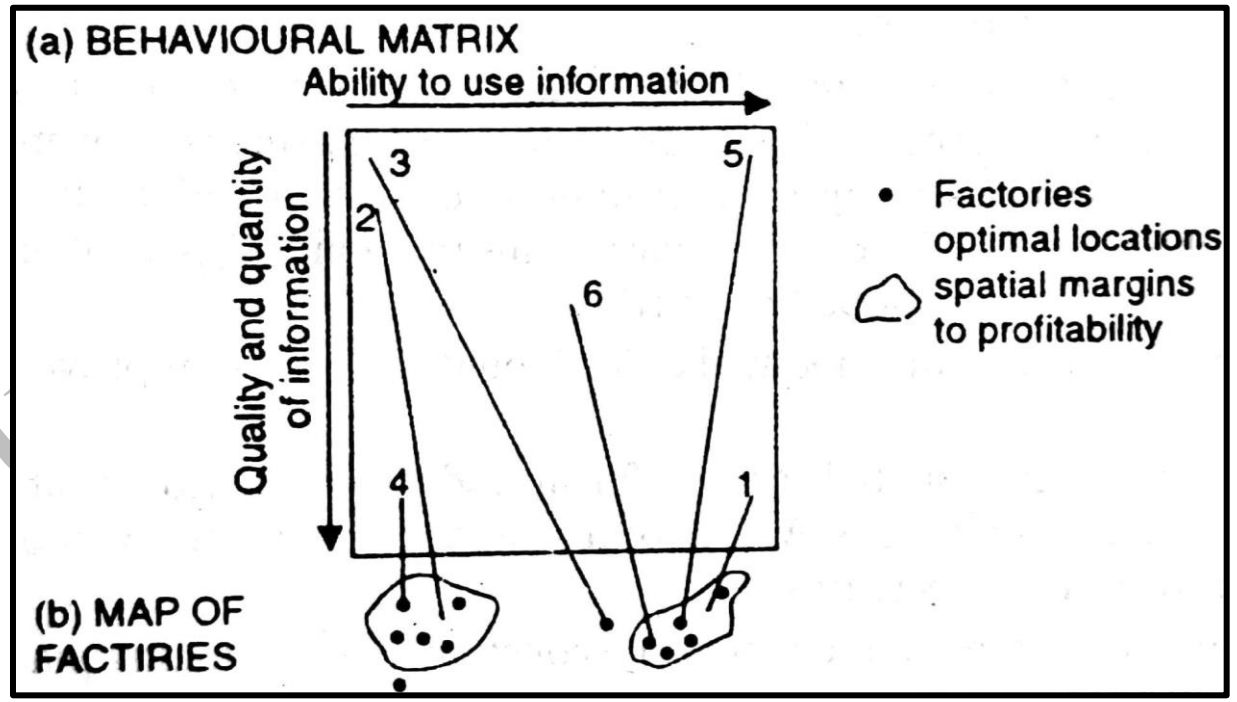
1. The **quality and quantity of information** changes.
2. The **ability to use information** may also improve.



The behavioural matrix of Allen Pred

1. Made **right decision** by using **good information** and his **ability to process** them. He is similar to ‘economic man’.
2. Made **right decision** but purely by **chance**
3. He is similar to 2, but not so lucky. He is making no profit, must **soon go out of business.**
4. Making profit but not doing well as he should because he has not been able to use the information available to him.
5. He is in a similar position as 4 but lacks the right information.
6. An average industrialist, **making a profit to the best of his ability and information**.

The spatial margins of an industry have been mapped, showing two optimal locations.



Criticism

1. **Responses** to changes in information are portrayed as **mechanical**.
2. In reality information and its use cannot be separated, both are interlinked, though not as cause and effect.
3. **Motivation** as a factor affecting locational decisions is ignored.
4. **Political** and **social environment** in which decisions are taken has also been **ignored**.
5. **Quantification of human behavior is difficult**.

August Losch

Profit Maximization Theory

Introduction

- German economist, published his theory of '**Profit maximization**' in **1940**
- Discarded Weber's model
- He believed that **industries will be located where maximum profit can occur**
- To get the **maximum profit,** as stated by Losch, total **consumption** is important.
- Higher the **consumption rate (the Demand**), greater will be the profit.
- In this case, **he emphasized most on the price reduction of the commodity**
- The theory of August Losch considered **demand as a most important variable**.
- His model explains the **size** and **shape** of **market areas** within which a location would command the largest revenue.

Assumptions

In the presence of certain optimum conditions, the maximum profit location may occur:

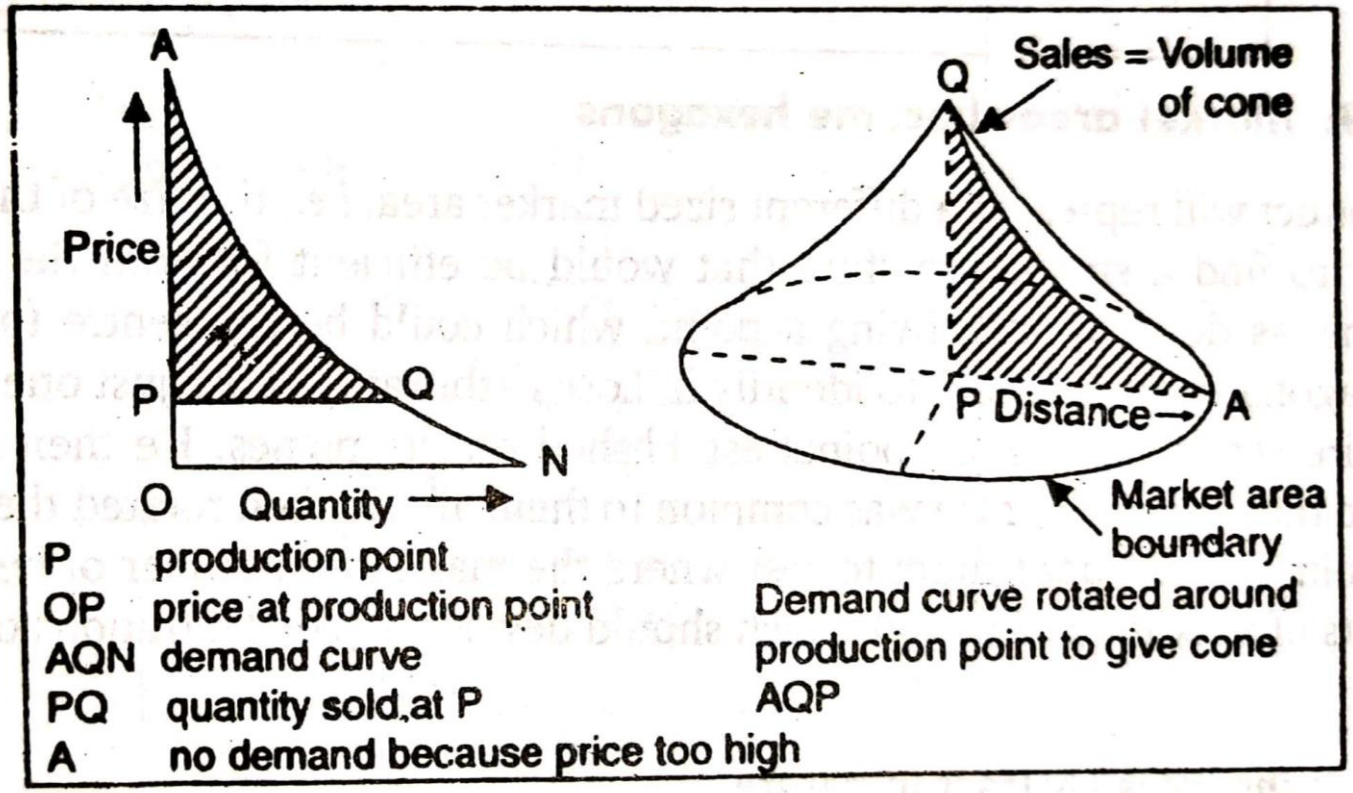
1. An **extensive homogenous** area
2. **Even distribution** of raw materials
3. The '**transport cost' is uniform** and directly proportional in all the directions.
4. **Population** is evenly distributed
5. **Demand decreases with an increase in price**.
6. **Entrepreneurs act as economic men**, their main aim being profit maximization.
7. Unlike Weber's assumption of '**perfect competition**' Losch believed in **monopolistic market.**

Three phase model: Phase 1

In this first phase Losch observed that if symmetrical demand of a product prevails in the market, the market conditions may be explained by a demand cone.

- Theoretical shape of the model

Effective demand of a particular product = volume of the cone



Three phase model: Phase 2

- In the second phase, within the vast rounded area, **several factories will concentrate**.
- **Competition among the firms increases to capture larger share of consumer and larger market areas**
- If due to higher price, the company loses some of its market area. That area is automatically encroached by the adjacent firm.

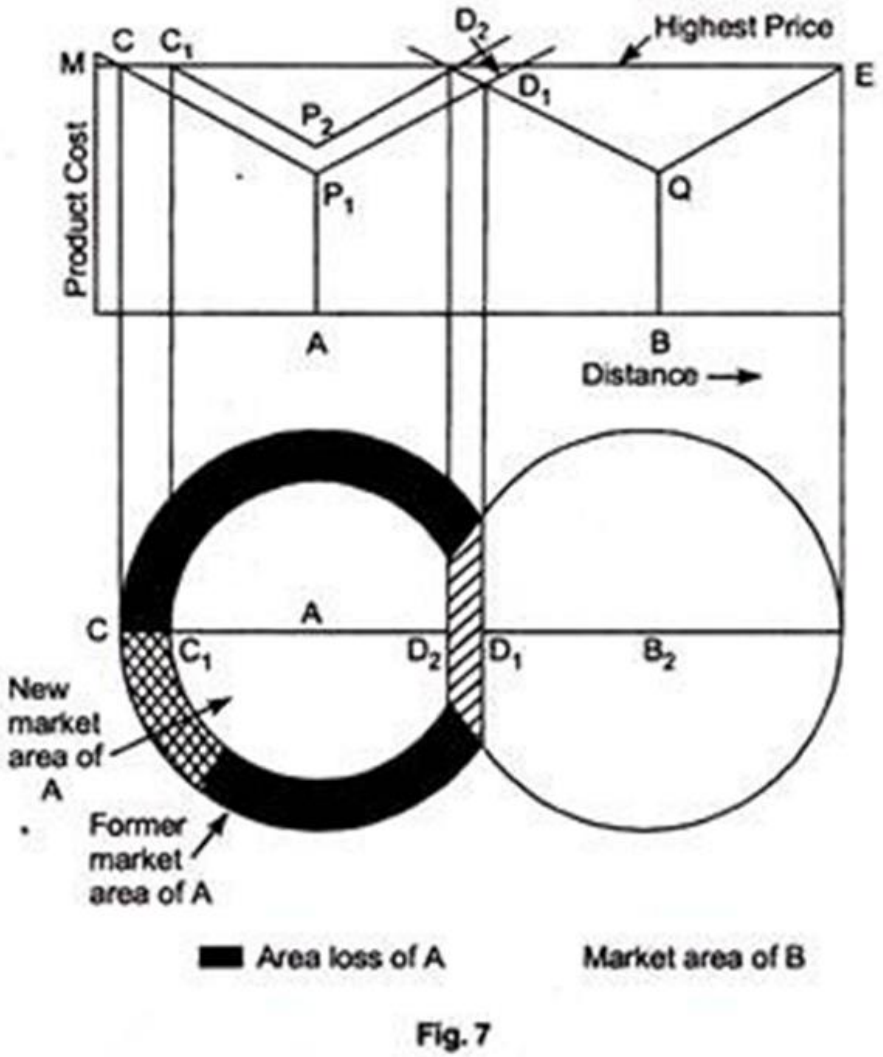
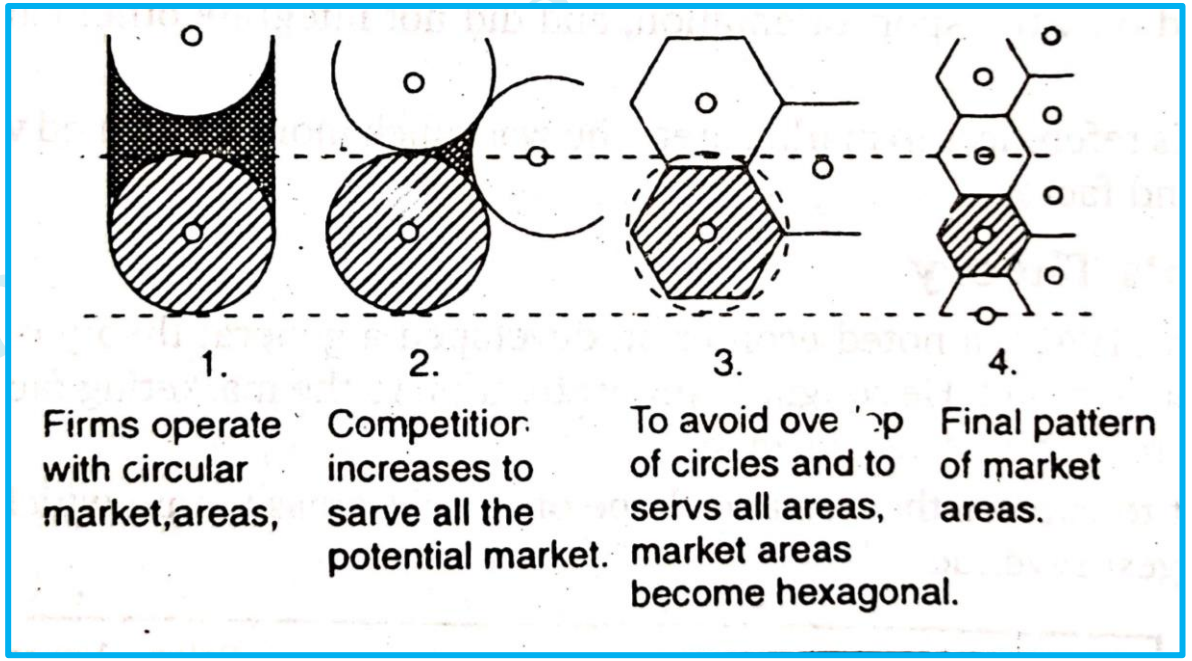


Fig. 7

Three phase model: Phase 3

- There are **many producers** located on the plane.
- Each of them is **equidistant** from the other
- Their **market areas** are **circular**.
- The size of the market area is dependent on the number of entrepreneurs/producers.
- As **producers increase in number**, the **market area becomes smaller** and smaller.
- Voids in this pattern (unserved areas)
- Later on, **hexagonal pattern evolve** (same as that of Christaller)
- Finally, when the plane is packed with producers, a **mesh of hexagons develops**.



Different product/ commodity, different size of market area

- Therefore, **the size of the hexagons varies**
- Losch sought to find an efficient **spatial structure** for both the producer and the consumer.
- By identifying **one common point**, which could be the **centre for each of the different hexagonal market areas.**
- To identify it, Losch arbitrarily chose just one production centre from the entire set of production points established on the planes.
- He then arranged the mesh (hexagons) so that this **one centre was common to them all**.
- He then **rotated the hexagons around the central point** and brought them to rest where the **maximum number of hexagons coincided**

Forming points of maximum demand which should develop as concentrations of industry

Bos H.C. & Hamilton

BOS H.C.

- Bos presented **hierarchical hexagonal model** for the **supply** and **development of industrial landscape** of a region

  Bos ने किसी **क्षेत्र की पूर्ति** एवं **उसमें विकसित औद्योगिक भूस्वरूप** में **पदानुक्रमता** का **षट्भुजीय मॉडल** प्रस्तुत किया।

- बॉस के अनुसार औद्योगिक भूस्वरूप का विकास:
  - ✓ **Favorable factor** leads to establishment of a **factory at the centre of that region**
  - ✓ After sometime there evolves industrial landscape
  - ✓ कई **भिन्न प्रकार के उद्योगों** का विकास
  - ✓ **यातायात** एवं **आवास** में अभिवृद्धि
  - ✓ कई **संभावनाओं** का विकास (मांग में वृद्धि, demand of variety of commodities, transport facilities, opportunities for other industries/ancillary industries to grow) **Through this the production levels/ the capacity of an industry can be increased**

- केंद्र पर उद्योग का विकास
- **प्रभाव क्षेत्र** में वृद्धि
- क्षेत्र का **वृत्तीय स्वरूप (Circular form of Influence area)**
  - विकसित **षट्भुज स्वरूप** (संपूर्ण क्षेत्र कई प्रकार के उद्योगों के प्रभाव क्षेत्र में सम्मिलित हो गया है) **संपूर्ण क्षेत्र की आवश्यकताओं की पूर्ति अब संभव है**
- **केंद्र** में **सबसे बड़ा उद्योग**
- **कारखानों की संख्या केंद्रीय क्षेत्र में सर्वाधिक**
- **केंद्र एक नगर** भी हो सकता है
- उपक्षेत्रों में कारखानों की संख्या कम होगी
- सुविधाओं में अपेक्षाकृत कमी रहेगी
- **Regional imbalance in industrial development**

- बॉस के अनुसार संपूर्ण क्षेत्र की आवश्यकता की पूर्ति के लिए यह आवश्यक है कि उद्योगों में **विकेंद्रीकरण decentralization** की प्रवृत्ति लाई जाए.

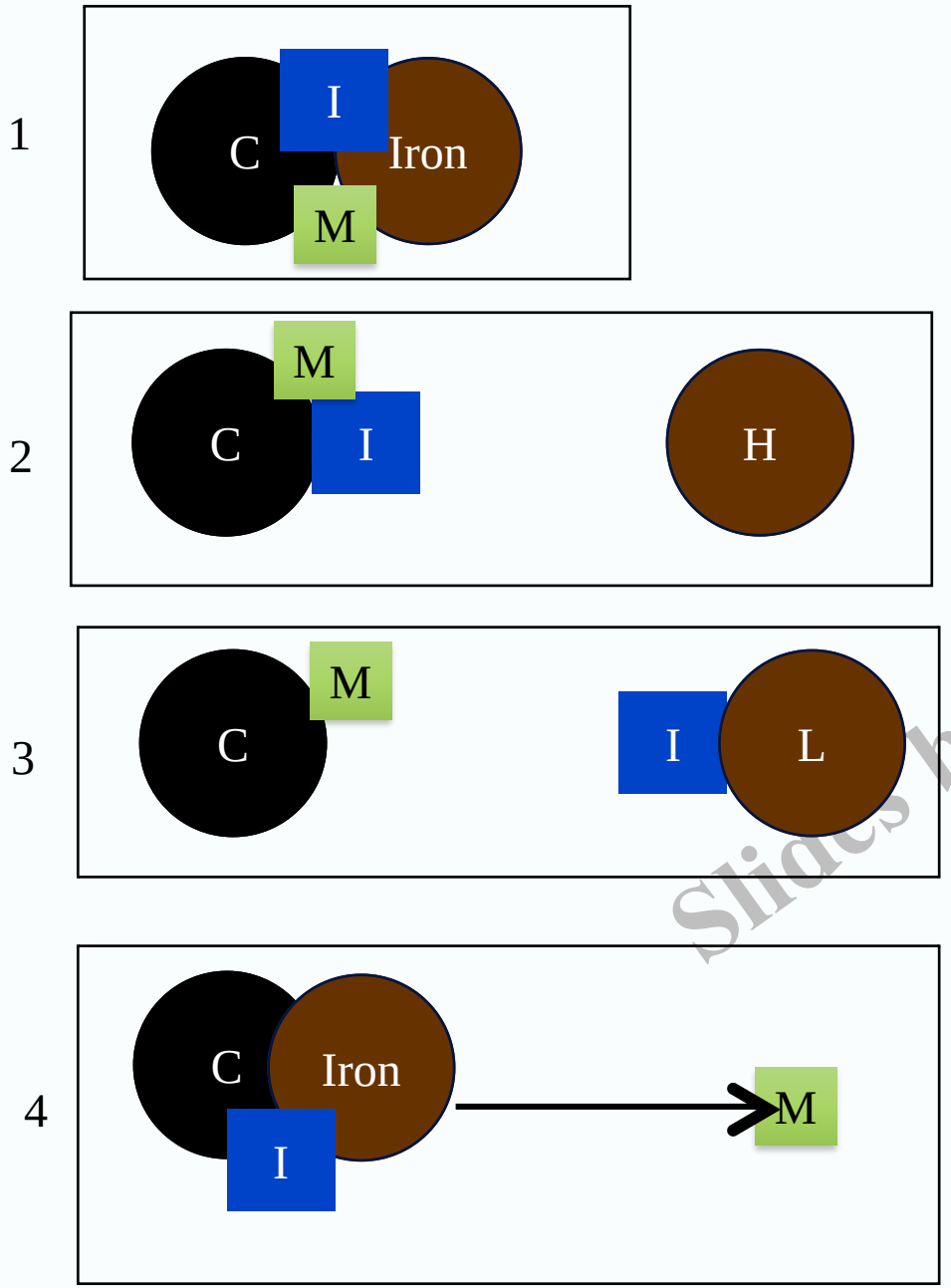
It is possible only when industrialist at the centre extends his monopoly in his influence area.

(How?)

By providing social and public facilities and services like malls, transport

F.E. HAMILTON

- Hamilton presented the *locational analysis* of **Iron and Steel industry**
- The industry ***does not have any ideal location***
- Two raw materials: **Iron ore** and **Coal**
- Optimum location: ***Point of least cost***



1. Both the raw materials and market centre are located nearby

Thus industry will be located at Market M

2. High quality iron ore (Hematite) but is found away from the coal source

Thus industry will be located at Market M near coal source

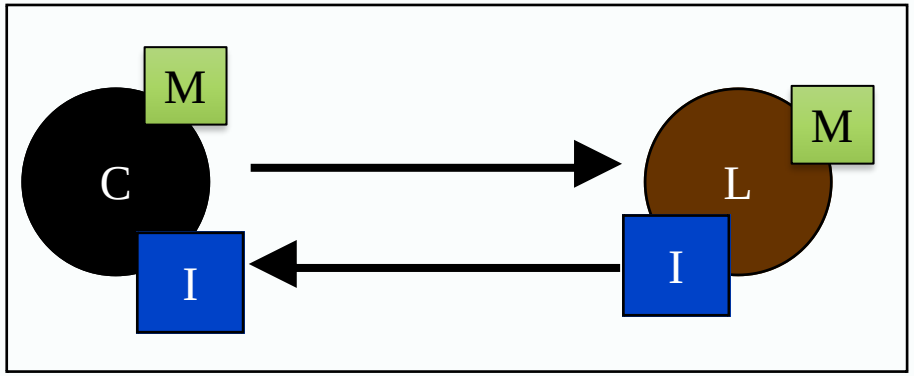
3. Low quality iron ore but found away from coal source. Market centre is near coal source

Thus industry will be located at iron ore source (as more transport cost on waste movement if established at M)

4. Both nearby raw material sources are found away from the M

Thus industry will be located at raw material source (saves a lot in transport cost)

5



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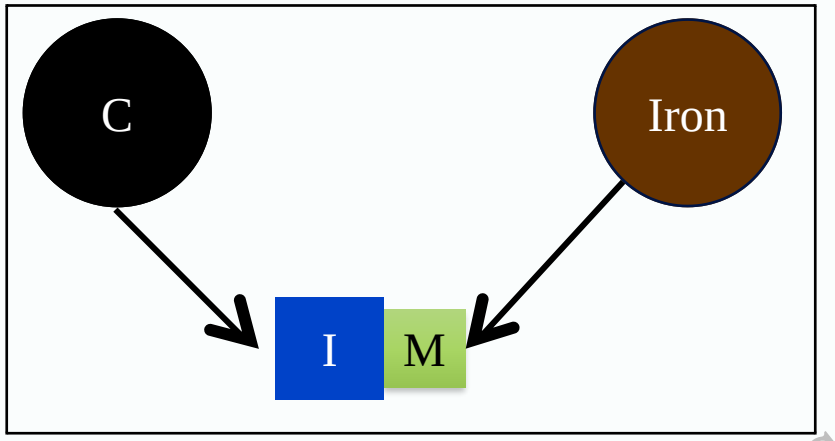

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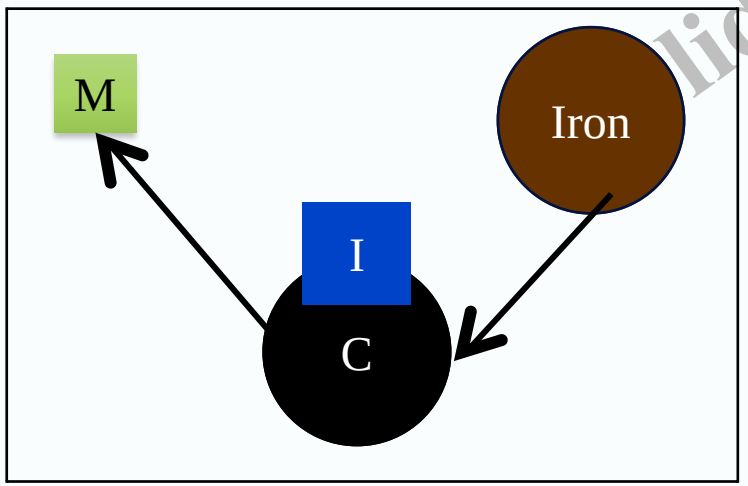


5. Two market centres each at one of the sources of raw material

Both are suitable optimum location for industry

(Back-haul advantages in transportation)

6. Coal and iron ore sources are located far away from each other

Market exists between them (Midway) Therefore suitable for firm establishment

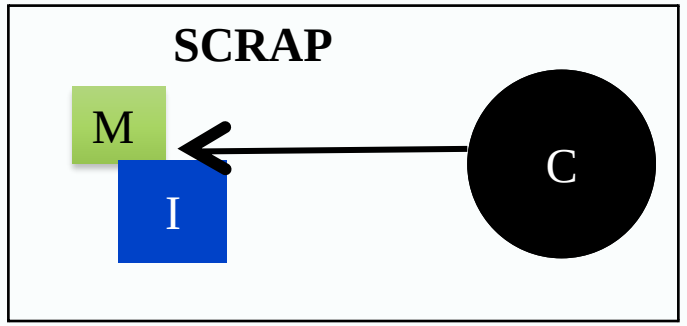
7. Both the raw materials are lying on the **same transport route. But m**arket is situated far away from both .

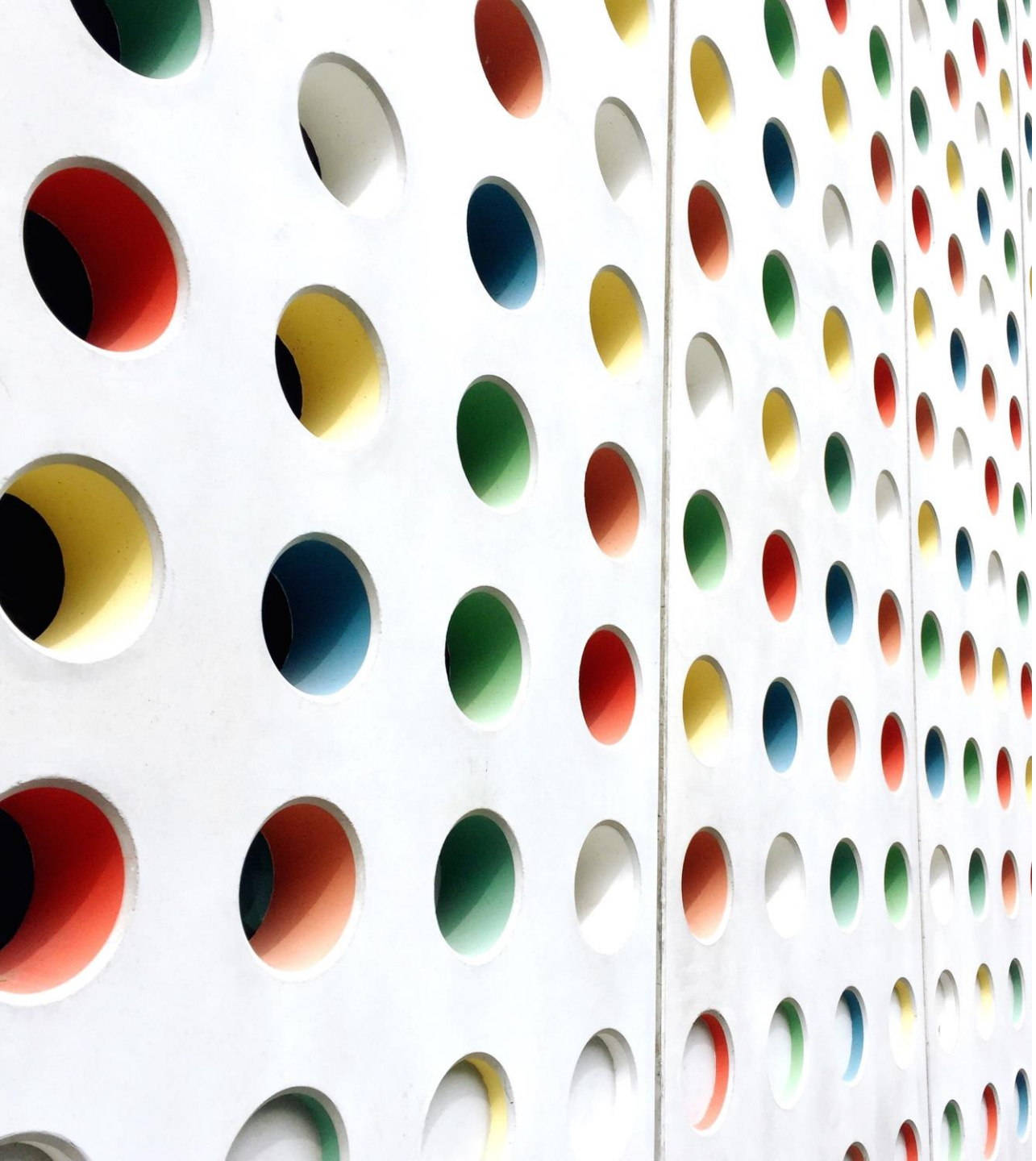
Firm will be established at the factor closer to market

8. When **scrap of iron** is used as raw material

Firm will be established in its available areas i.e. market

8





E. M. RAWSTRON

Locational Cost Analysis Theory

Rawstron's Theory of Industrial Location:

- E. M. Rawstron has given a **simple principle of industrial location**, which is entirely based on **geographical elements**.
- **According to Rawstron, the industries are located at a place where *cost is minimum*.**
- He pointed out that
  - ✓ first of all **expenditure on each element is to be examined** and
  - ✓ then location be determined at a **place of maximum profit**
- Or industries are established at a place **where the cost is least**.

Rawstron's Facts:

i. Special **effective factors** for the establishment of industries are

raw material, market, land and capital

ii. Locational cost of all types of expenditure.

iii. Cost structure – **cost percentage** of each item.

iv. Zone of partial margin to profitability

this is the aspect when profit is converted to loss or loss is converted into profit.

v. ***Basic cost*** — the **cost which is different for each element** according to amount and quality of the factor.

Assumptions:

1. **Mining** is also considered as an industry.
2. **Transport** is only significant with industry.
   - The main importance of transport lies in collection of raw material and distribution of manufactured products;
   - Transport cost is always included in product cost.
3. There are ***physical***, ***economic*** and ***technological*** pressures in the establishment of industries.

Rawstron has Suggested Three Principles

I. Principle of Physical Restriction:

The location of industry is always controlled by physical factors. Among physical factors he has given prime importance to **availability of minerals**. There are several places where occurrence of mineral is possible but it is necessary to find out **where its mining is profitable**.

II. Principle of Economic Restriction:

Rawstron has given two important economic aspects.

These are:

(a) Cost Structure of Industry: Including all the expenditure related with ***establishment*** and ***function*** of an industry, especially expenditure percentage on ***labour***, ***raw material***, ***transportation***, ***marketing***, etc.

(b) Spatial Margins of Profitability: This is a point where cost of industry is more than profit. Therefore, industry is established only after **calculation of profit margin** and the ***best location*** is where **cost is minimum**.

III. Principle of Technical Restriction:

Technical knowledge is a pre-requisite for every industry.

Therefore, due consideration should be given not only to the **availability of technology** and its knowledge but also its **cost**.

Factors	Labor	Raw Material	Land	Market	Capital	*Total %*
Industry A	7	60	9	8	16	**100**
Industry B	45	20	7	8	20	**100**
Industry C	29	29	2	7	33	**100**

Case 1: Different industries A, B & C and their expenditure. Identifying the industrial orientation

	Firm A	Firm B	Firm C
Labor	2	6	2
R.M.	2.2	2	6
Land	2.2	2	2
Marketing	2.2	2	6
Capital	2.2	2	2.2
Total Expenditure	**10.9**	**14**	**18.2**

Case 2: Different factories A, B & C of same industry and their comparative expenditure over different locations. Identifying industry's optimum location

Edgar Hoover

The location of Economic Activity

Introduction

- E. Hoover published a study of the **shoe and leather industries** in **1937** & **1948** in his book '***The Location of Economic Activity'***.
- His work '**Location Theory and the Shoe and Leather Industries'**
- **Objective** = to identify the area served by each producing point (point of production)

'Identification of Market Areas served'

- Contributed more towards Weber's efforts
- Hoover related **supply** and **demand** to the locations of individual firms, and
  1. Investigated general **industrial arrangements over the landscape**, and
  2. the **problems of communities and regions**.
- He included these factors in his analyses in search for **regional differences** i.e.

why some regions do well and other are distressed.

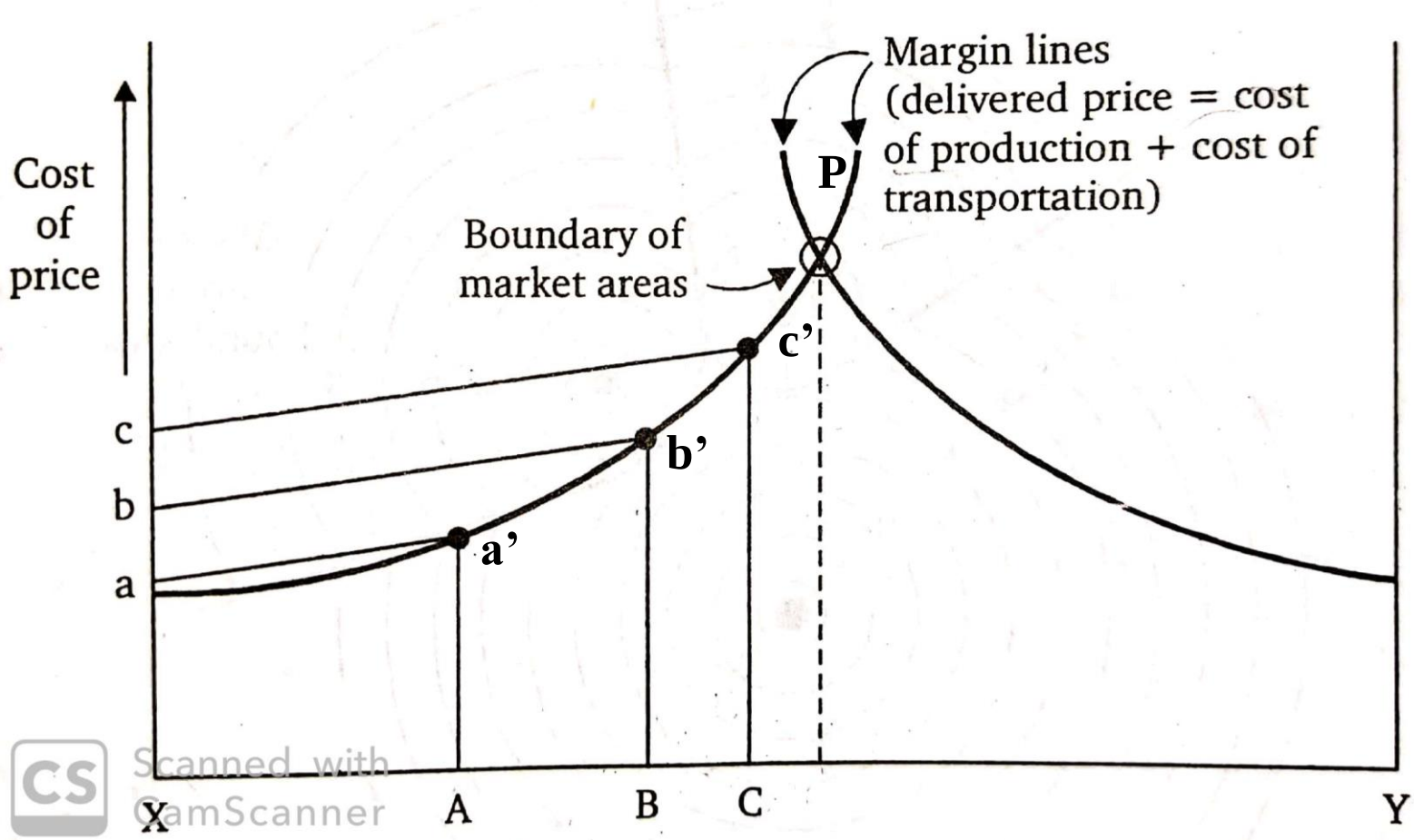
क्यों कुछ ही क्षेत्रों का हित हो रहा है जबकी दूसरे संकट में हैं

Assumptions

1. There is **perfect competition** between producers or sellers at any one location.
2. There is **perfect mobility** of **factors of production**.
3. The **transport costs** and **production or extraction costs** are the ***determinants of location***.
4. Buyers are '**economic men**', i.e. **they obtain the commodity from the source that offers the lowest delivered price.**
5. **Transport costs vary with distance.**

- ***Hoover's theory is based on delivered prices.***
- ***Delivered prices = cost of production + transport cost.***
- ***These are represented by ISOTIMS (lines joining places of equal delivered price).***

- A mineral is extracted at point X,
- A, B, C indicate possible limits to its market area is one direction.
- If supply is made to the area XA, then the **production costs are indicated by Xa**
- The line aa' shows how delivered price increases away from X as transport costs are added.
- If the isotim is extended to B. the cost of extraction rises to b, and a new transport is gradient (bb')
- Possible limits of the market area produces ***margin line*** (boundary of market area)
- Another mineral is found at **Y**.
- Intersection point **P**
- **At P, delivered price is the same for X and Y: elsewhere one source offers the product at a lower price than the other.**



- This analysis can also be applied to **formation of market areas** for a manufactured product.
- To create **economies of scale** (cost of production decreases with rising output) the margin line will fall with increasing distance from the production point.
- At the point of **diminishing returns** is eventually reached, the **margin line will turn upwards**.

The slope of the margin line has great implications for plant location.

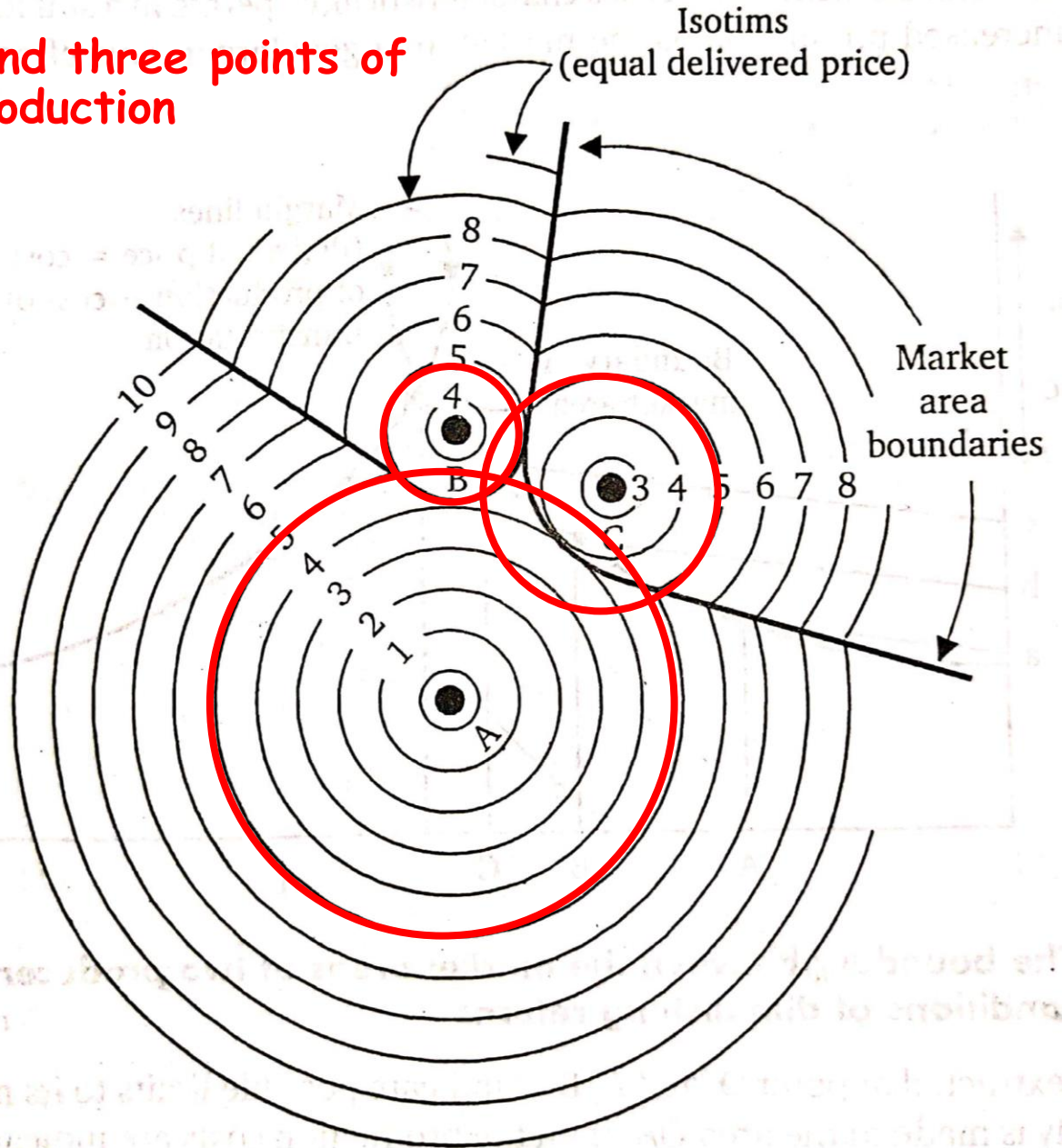
This can be analyzed with respect to **two situations**:

1. When the **margin line rises steeply away from the point of extraction**, it will **encourage other producers to set up plants in intermediate location** to serve areas with relatively high delivered price.
2. **When delivered price differs little with distance from the point of production**, a **small number of producers** will tend to supply large market areas.

Isotims around three points of production

There are three points of production (A, B, C), each having a different cost.

Isotims* drawn around them and the boundaries of their respective *market areas are at the delivered price watersheds.



- Acc. To Hoover in the **absence of production cost differences**, the best location will be at the **point of minimum transport costs. (in line with Weber)**
- He included both "**loading costs**" and other "**terminal charges**" and also **Long-haul advantages** in analyzing transport costs (Weber missed on this).

Frank A. Fetter

MARKET COMPETITION THEORY

Market Competition Theory

- In **1924** Frank A. Fetter had proposed the **law of industrial location.**
- He proved that all the production can be sold in the markets which are having unlimited demand.
- In other words, industries have been located according to the **demand** and **consumption**.
- Motive:
  - ✓ ***To identify market areas***
  - ✓ ***To establish 'monopoly' of a factory/ industry***
  - ✓ ***To achieve maximum profit***

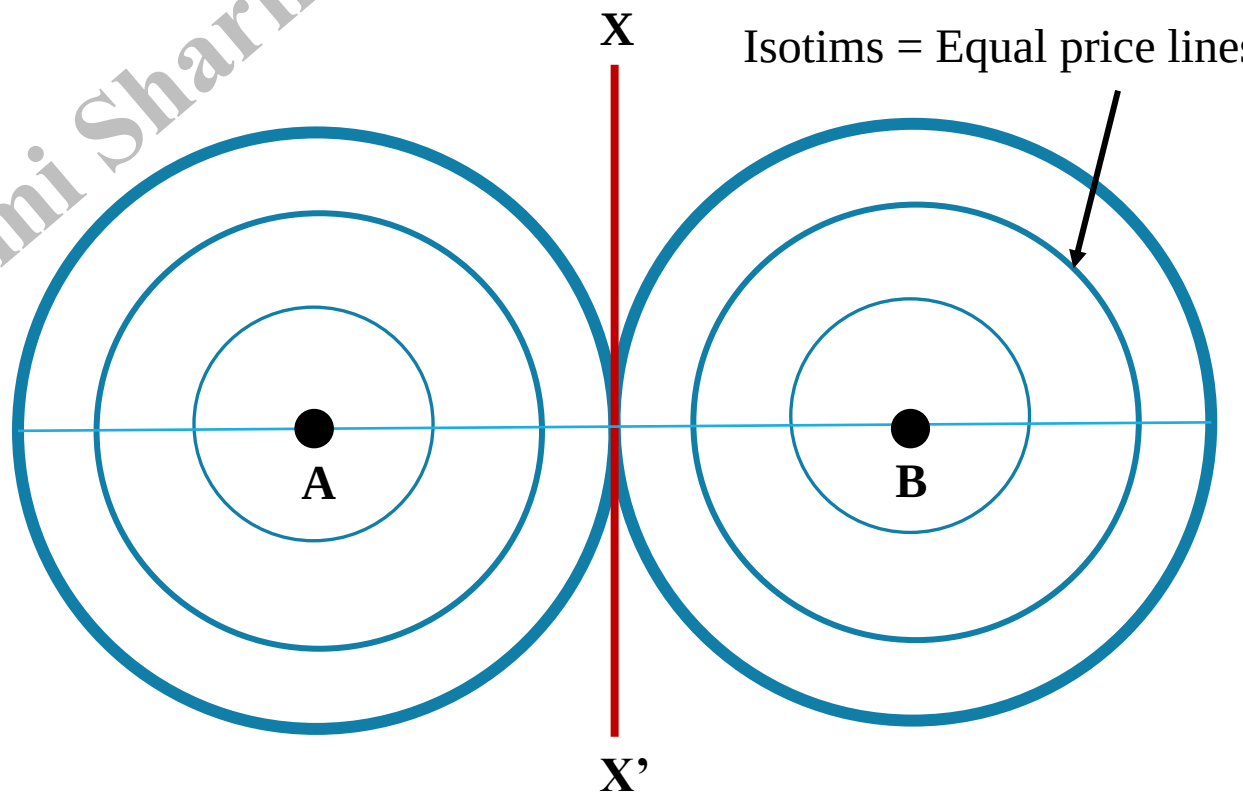
According to Fetter, the place having minimum cost is the place of maximum profit

- Acc. to Fetter, Weber missed **competition among firms** (Questioning Agglomeration concept)
- In reality, there exist **spatial variation in DEMAND**
- **Price value decides extent of market area**
- Lower the price → extensive the market area → more the profit and vice-versa

Fetter's law suggests the following locations

Case 1: Production Cost & Transportation Cost are **EQUAL**

The location of industry will be along centre line XX'

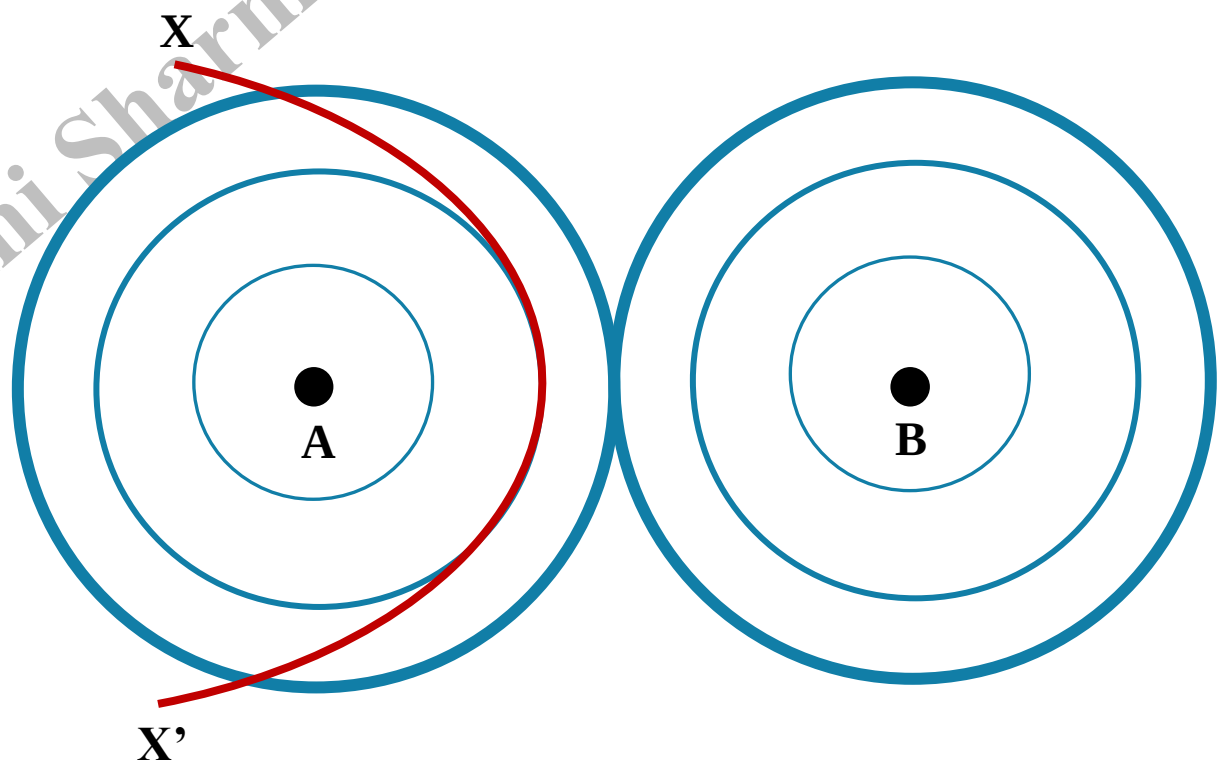


Ideal location between Market A & B

Case 2: P.C. of ‘A’ > P.C. of ‘B’

T.C. is equal

If production cost is varied, the boundary of industry will be inclined towards the centre of higher production cost

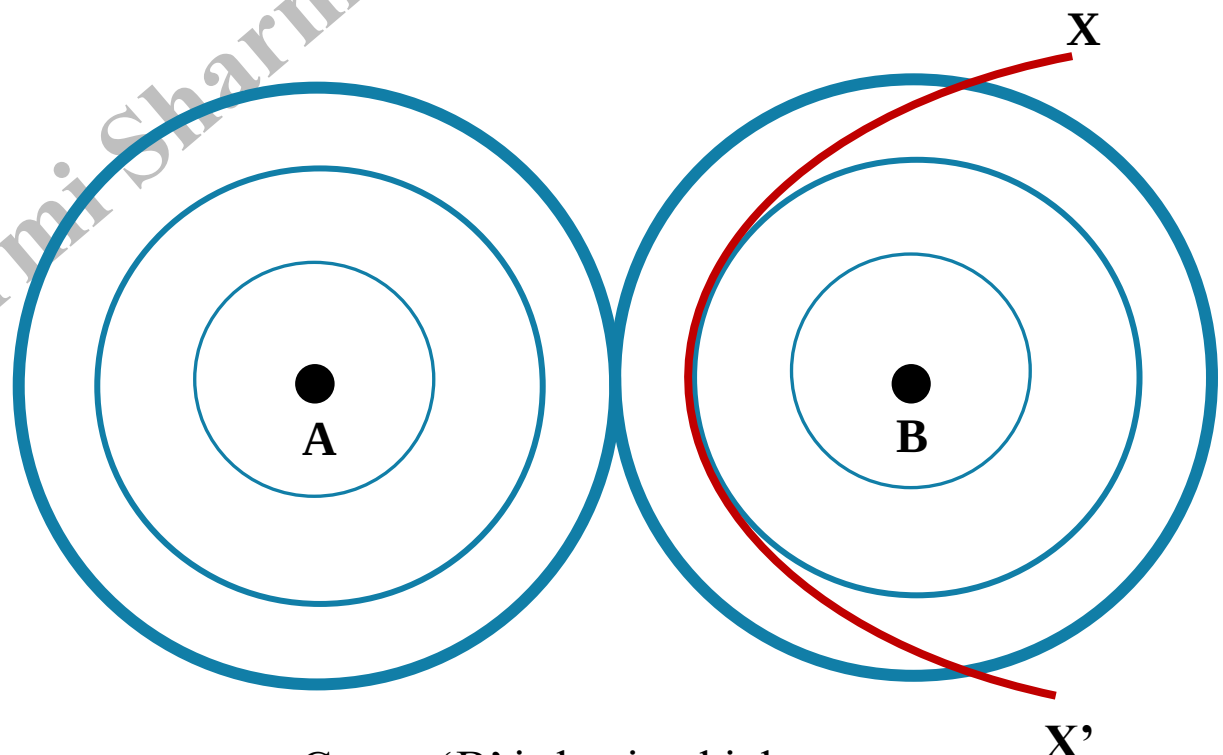


Centre ‘A’ is having higher Production ,therefore market boundary is inclined towards ‘A’

Case 3: T.C. of ‘B’ > T.C. of ‘B’

P.C. is equal

If production cost is similar and transport cost is higher at one centre then the market boundary will be inclined towards the centre having higher transport cost



Centre ‘B’ is having higher transport cost, therefore market boundary is inclined towards ‘B’

G. T. Renner

Renner's Theory of Industrial Location

- ✓ Renner, in his book entitled, **World Economic Geography: An Introduction to Geonomics (1960)**
- ✓ He introduced '***The General Principle of Industrial Location***' which was based on the concept of '**Factor-orientation**'
- ✓ Renner identified **six factors for the location of industries:**

  capital, transport, raw material, market, power and labor.
- ✓ Renner explained effect of each factor in his theory
- ✓ He also pointed that there is a tendency that many factors may be available at a particular place.

More the factors available at a place more it will be suitable for the industrial location

- ✓ Renner has given the term '**Industrial Symbiosis औद्योगिक सहजीवन**' for the **combination of these factors**.
- ✓ **Industrial symbiosis** is the process by which wastes or by-products of an **industry** or **industrial process** become the raw materials for another.
- ✓ Application of this concept allows materials to be used in a more sustainable way and contributes to the creation of a circular economy.

Symbioses types

1. **Disjunctive symbiosis, &**
2. **Conjunctive symbiosis**

- Disjunctive symbiosis is the condition when **two or more different industries** in some region are beneficial for each other.
  - ✓ *No biological* relationship
- Conjunctive symbiosis occurs when in a region **different types of industries function with the help of each other**. In such a case product of an industry is utilized by other industry as a raw material.
  - ✓ *Biological* relationship exist
- Both these symbioses will frame the future curse of industrial development

Law of Industrial Ecology

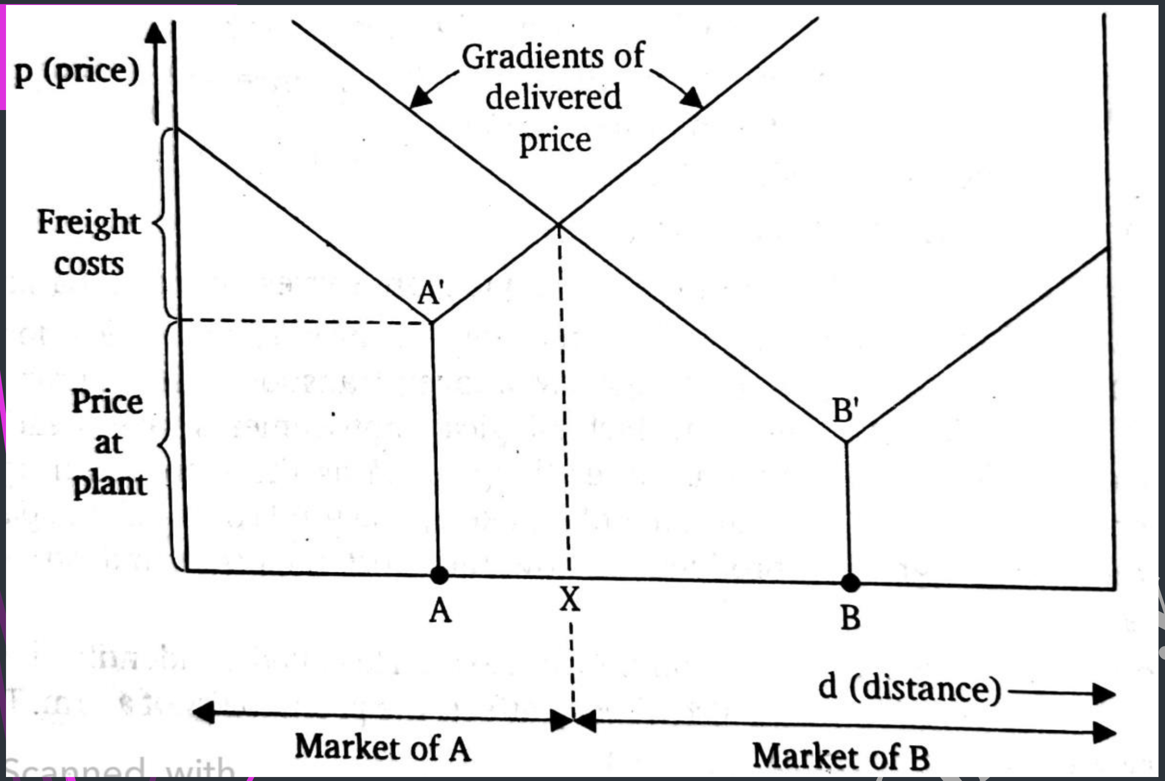
- ✓ Any industry tends to locate at a point which ***provides optimum access*** to its ingredients or component elements.
- ✓ If all these component elements be **juxtaposed**, the location of the industry is predetermined.
- ✓ If, however, they occur **widely separated**, the industry is so located as to be most accessible to that element which would be the most **expensive** or **difficult to transport** and which, therefore, becomes the ***locative factor*** for the industry in question

Slide by Urmi Sharma

Tord Palander

Introduction

- A **Swedish economist**, Tord Palander published his **industrial location theory in 1935**.
- He distinguished **two fundamental questions** in attempting to develop a theoretical approach to industrial location:
  1. Given the price and location of materials and of the market, where will the production take place?
  2. Given the place of production, the competitive conditions, factory costs, and transportation rates, how does price affect the extent of the area in which the producer can sell his goods?



The market area of A and B

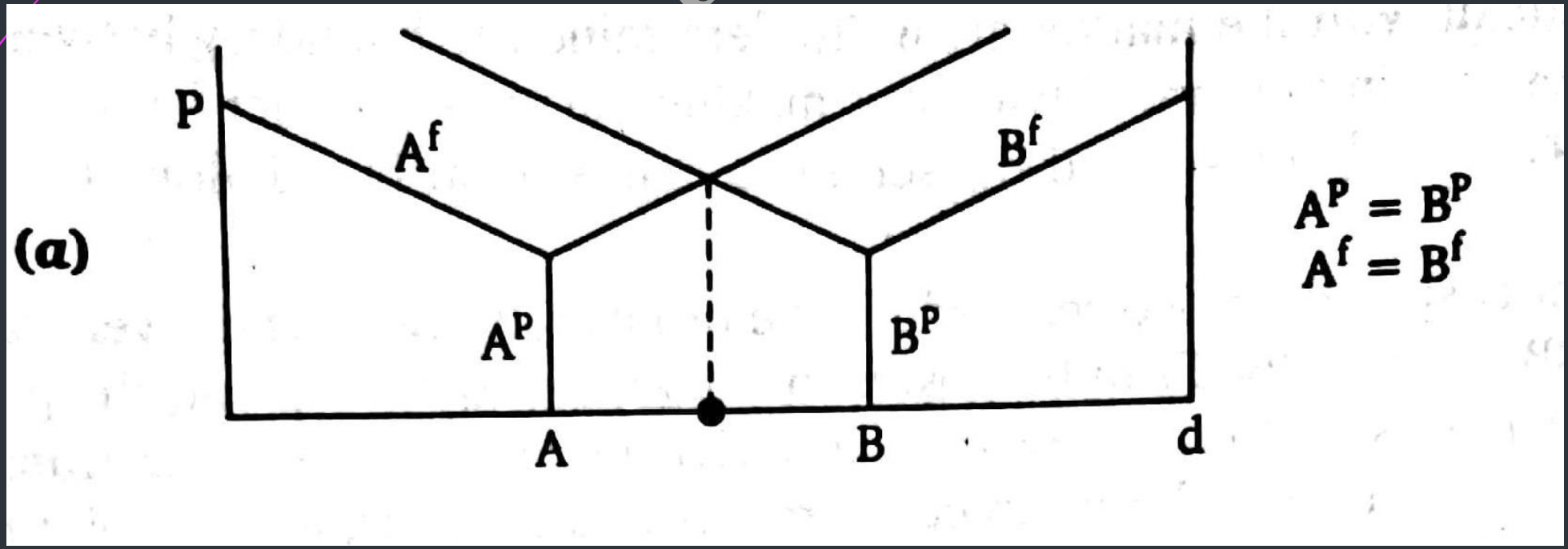
- First he dealt with the market areas.
- To determine the boundary between the two market areas, he takes the simple case of **two firms making** the **same product** for a linear market.
- Here, there are two **plants - A and B - serving a market** distributed along the horizontal axis of the diagram.
- The plant cost or the **price charged** for the product at source is the vertical distance **AA’** for firm ‘A’ and **BB**’ for firm ‘B’.
- Firm B’s cost is lower.
- Price to pay increases as the cost of transportation increases away from the plant.
- The rising transportation cost is shown by the lines rising in both direction from A' and B'. Thus, at any point the price charged includes a **fixed plant cost** and a **variable cost of transportation**.
- The boundary between the market areas of the two firms will be at X. Here the **delivered prices from both producers is equal** and **consumers will be indifferent** as to which firm they buy from.

- Palander illustrates a number of variations on the situation by changing the relative values of the plant price (P) and freight charges (f)

a) The two firms have

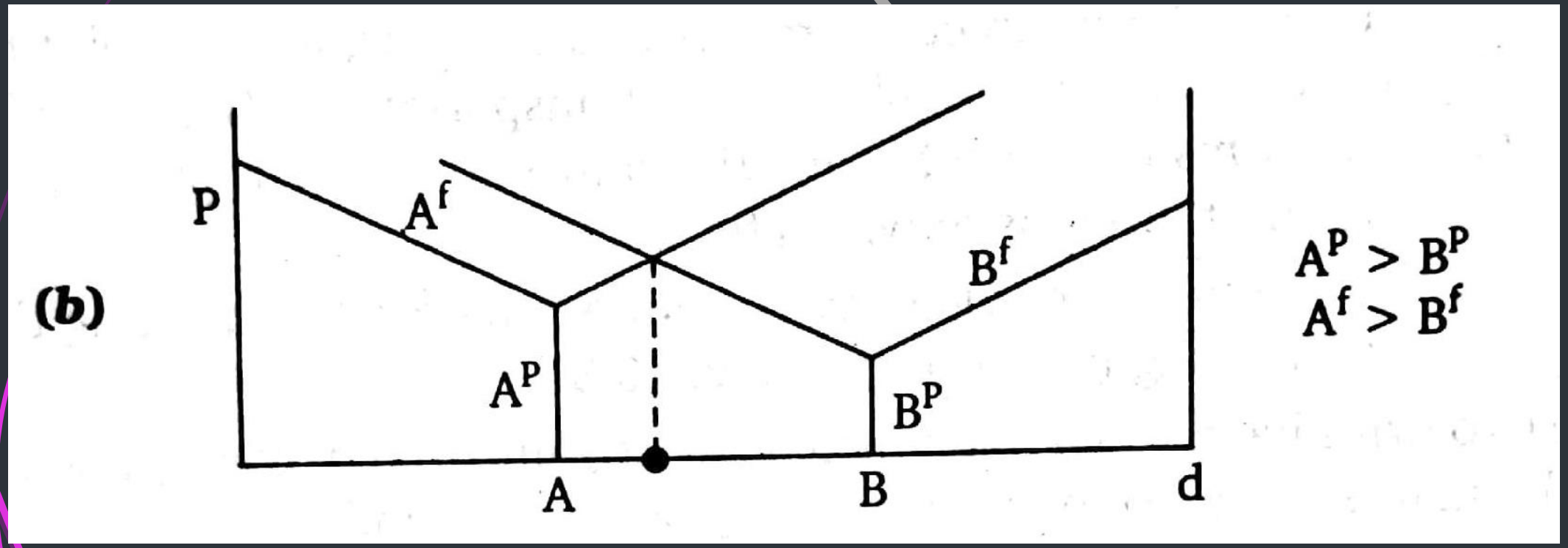
- ✓ **equal plant price** and
- ✓ **same freight costs per unit of distance**

so the market area boundary is midway between A and B

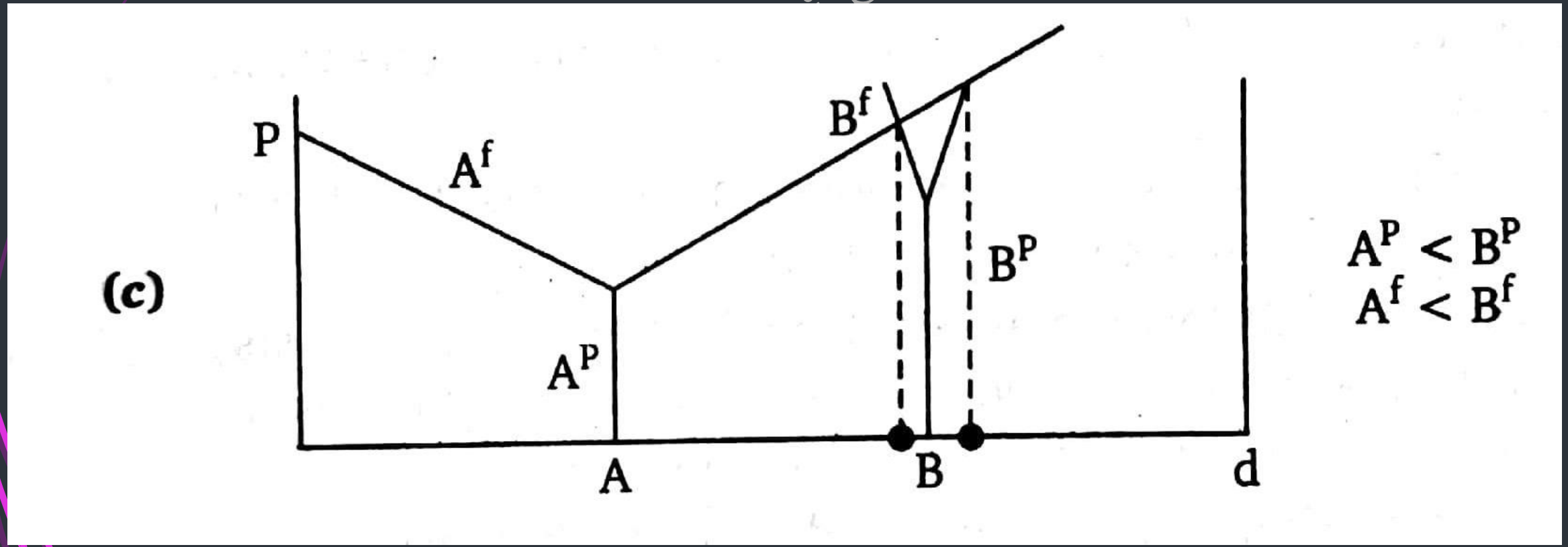


b) There are **equal freight rates** (the slope) but **lower plant price** at one location (B).

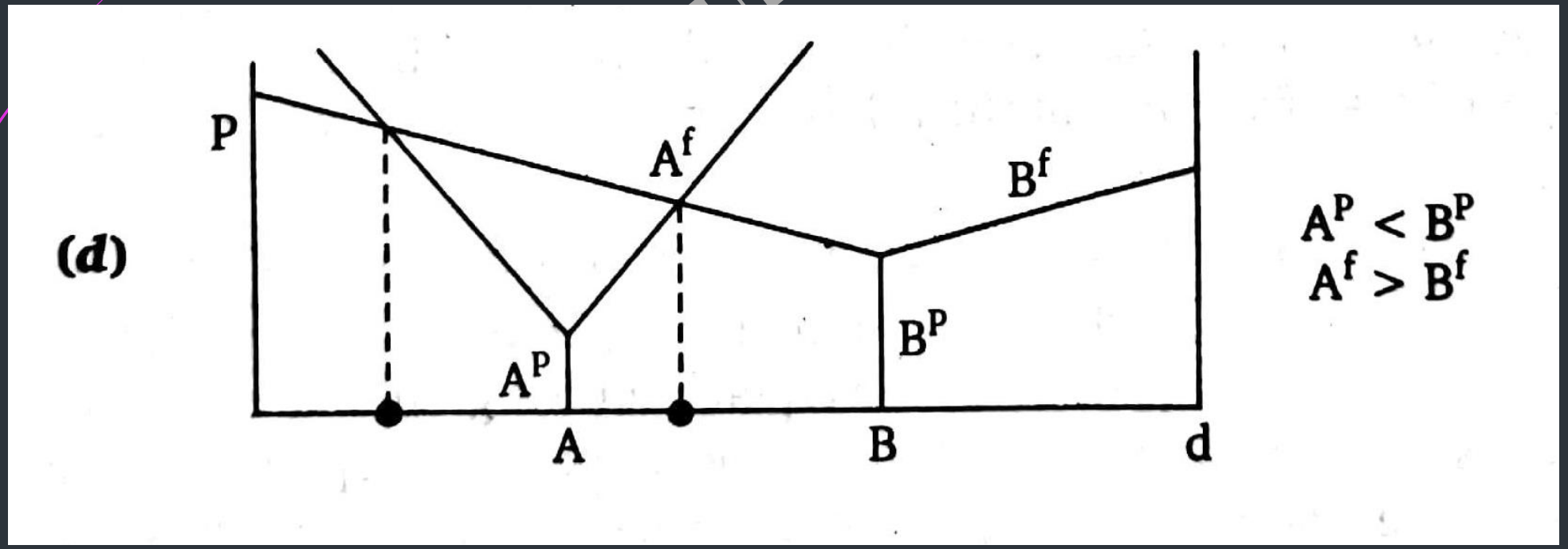
Thus, B controls more area than A



c) B has a **higher plant and transport cost** than A, but is still able to control a **small market area** by virtue of the **higher delivered price from A near B.**

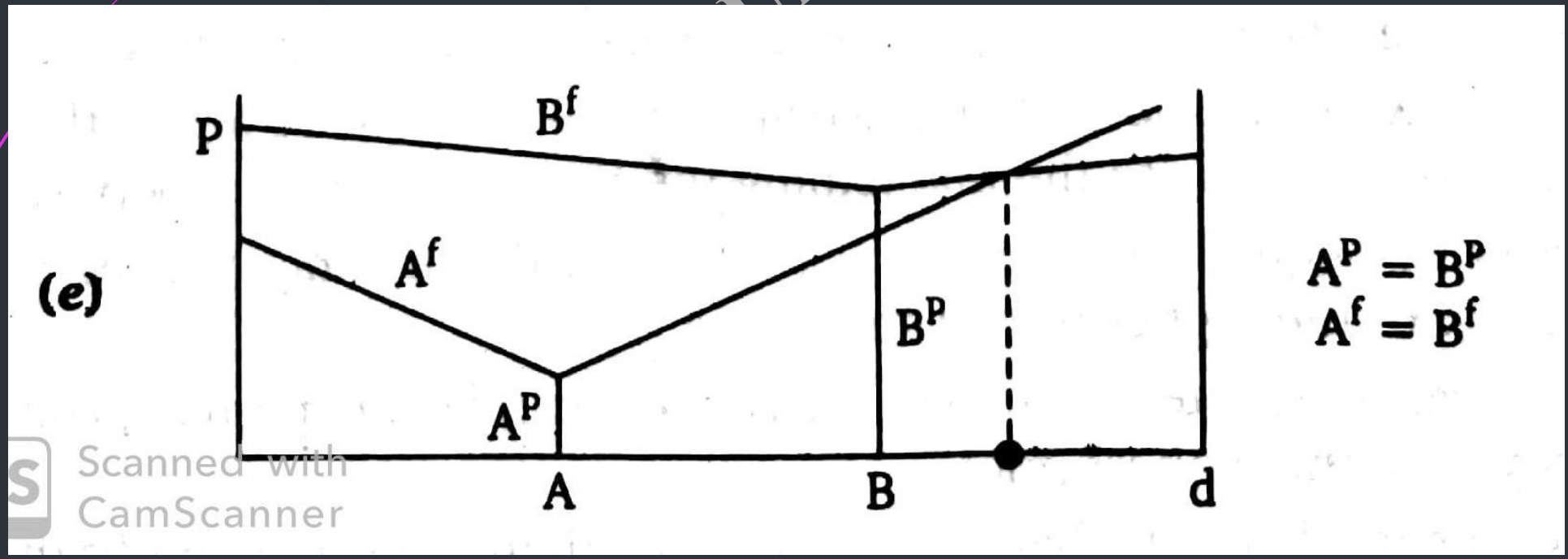


d) Where one firm has **lower plant price** but **higher transport costs** than the other,
it is able to **control an extensive section of the market** but there is an area near A where B regains control by virtue of its lower freight cost.



e) Here the situation is the same as d, except that firm B cannot serve the market immediately joining its factory

- because the price at the point is high.
- It is only at some distance away from A that the relative low freight rate from B allows the firm to sell at a lower price than A.



- The above situations can be seen in a three dimensional manner.
- In three dimension, the market area boundary (or ***isotante***) becomes a focus of points where the delivered prices from the producers are equal, and the gradients of delivered prices from an inverted conical surface with an apex directly above the point representing the factory.
- Certain **generalizations** can be made concerning the **form of market area boundary** in different circumstances:
  - (a) If for the two firms, both **plant price and transport rates are equal**, the boundary will be a line perpendicular to the line joining the firms and **midway** between them.
  - (b) If **prices are equal but costs of delivery vary**, the ***isotante*** will be a **circle round the factory with the higher freight rate**.
  - (c) If only **transport rates are equal**, the ***isotante*** will be a **hyperbola**, concave towards the **factory with the highest price**.
- ***The size of the market area that a firm controls will influence the profit that it makes***.