

Unit 2

ADVANCES IN TRADE THEORIES

Learning Outcomes :

After reading this unit, the student will be able to :

- Understand and evaluate modern trade theories incorporating economies of scale, imperfect competition, and technological innovation.
- Analyze key models such as Krugman's intra-industry trade model, Posner's Technological Gap theory, and Vernon's Product Cycle theory, along with their graphical representations.
- Differentiate between Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI) and assess the role of Multinational Enterprises (MNEs) in international trade.
- Explain how trade contributes to economic growth and global integration, while critically examining the limitations of these theories.

2.1 Introduction

Contemporary innovations in international trade theory demonstrate a shift away from the static frameworks of classical and neoclassical models and toward more dynamic and empirically relevant methods. These current theories explain real-world phenomena, including as economies of scale, imperfect competition, technological innovation, and multinational

corporations' strategic behavior. The addition of these variables has improved our knowledge of intra-industry trade, product differentiation, and the changing structure of global production. Notable contributions, such as Posner's Technological Gap Model and Vernon's Product Cycle Theory, highlight the importance of innovation and time-based comparative advantage in determining trade patterns. This chapter analyzes these theoretical breakthroughs and their consequences for global trade dynamics.

2.2 Economies of Scale and International Trade

One of the main assumptions of the Heckscher–Ohlin (H–O) model is that both goods are produced under constant returns to scale, meaning that if all inputs (like labor and capital) are doubled, output also doubles. However, in the real world, many industries experience increasing returns to scale, where output increases more than proportionally when inputs are increased. This means if a firm doubles all its inputs, it produces more than double the output.

Because of this, even if two countries are completely identical in terms of resources and technology, they can still gain from trade, which the traditional H–O model cannot fully explain. Increasing returns to scale often arise because larger-scale production allows for greater division of labor and specialization. Workers can focus on simpler, repetitive tasks, which increases efficiency. Also, bigger operations can use more advanced and specialized machines, which are not affordable or efficient at small scales. According to a study by *Antweiler and Trefler* (2002), around one-third of manufacturing industries show signs of increasing returns to scale, highlighting how important this concept is in understanding modern trade patterns.

Core Assumptions Underlying Economies of Scale :

- **Indivisibility of Factors** : Certain inputs, like machines or skilled personnel, are more efficient when used at a larger scale.
- **Specialization and Division of Labor** : Growing firms divide tasks among workers and departments to boost productivity and cut costs.
- **Technological Efficiency** : Larger firms can afford advanced technology and automation, improving production efficiency.
- **Bulk Buying of Inputs** : Big firms buy raw materials in large quantities at discounts, lowering average costs.
- **Spreading of Fixed Costs** : Fixed costs stay constant but are spread over more units as output rises, reducing the cost per unit.
- **Managerial and Financial Advantages** : Large firms can hire specialized managers and access cheaper capital, enhancing coordination and lowering costs.

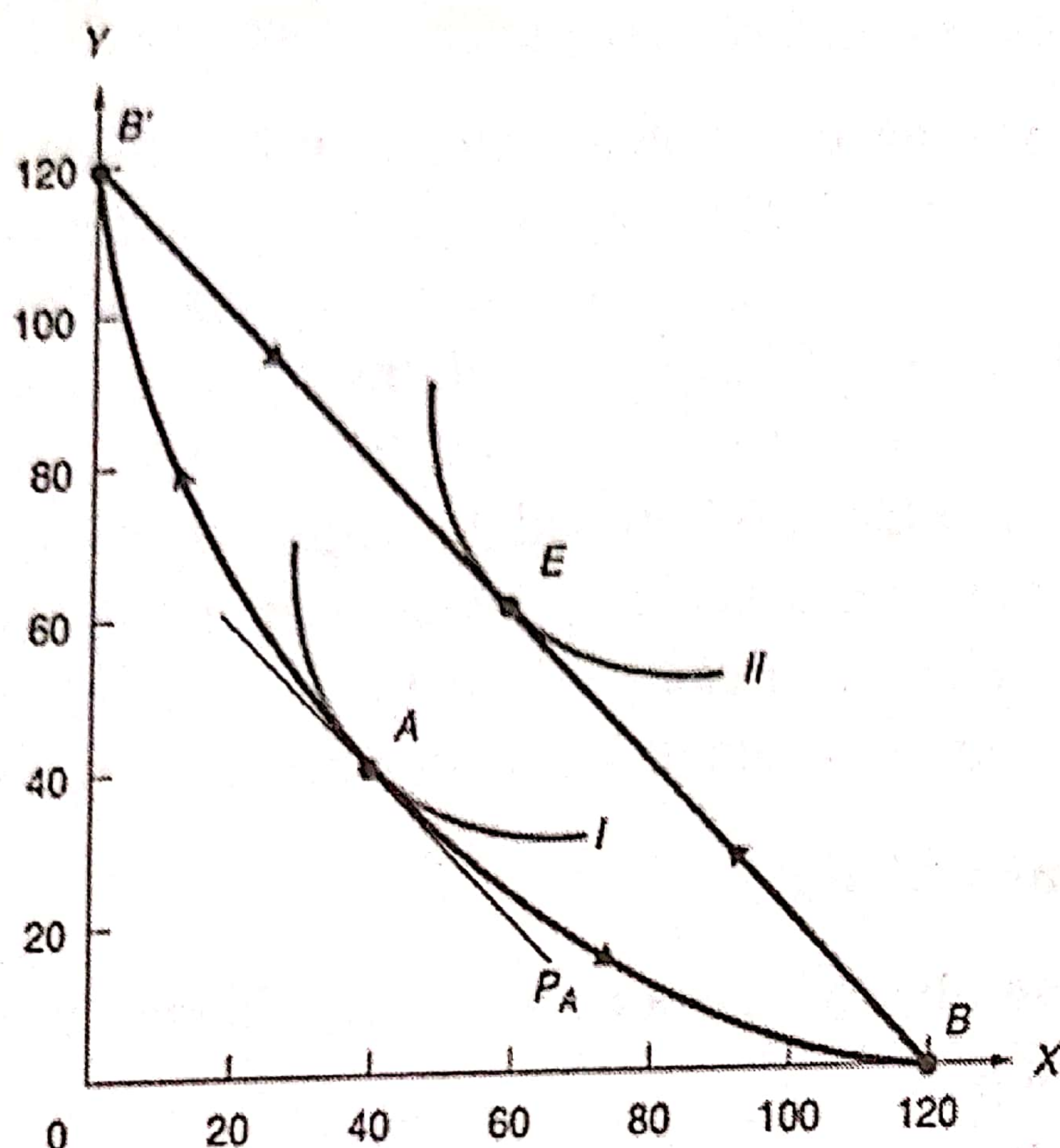


Fig. Economies of Scale

The diagram explains how two identical countries can both benefit from trade based on increasing returns to scale. In this setup, each country can produce two goods: Good X (shown on the X-axis) and Good Y (shown on the Y-axis). The production possibility frontier (PPF) is drawn as convex to the origin, meaning it bends inward. This shape represents increasing returns to scale, where producing more of a good lowers its average cost, making large-scale production more efficient.

Without trade, both countries would try to produce a mix of both goods. This is shown by point A, where the PPF touches indifference curve I. This indifference curve represents all the combinations of X and Y that give the country the same level of satisfaction. At point A, the country is not fully using the advantages of increasing returns to scale because it splits production between the two goods. The slope of the tangent line at A (labeled P_A) shows the relative price of the two goods when there is no trade. However, this point is unstable, if one country shifts slightly toward producing more of one good, it lowers the price of that good, making complete specialization more attractive.

With trade, each country specializes completely in one good. For example, Country 1 specializes in producing only Good X, moving production to point B, while Country 2 specializes in Good Y, producing at point B' (same point due to identical PPFs). They trade 60 units of X for 60 units of Y. After the trade, both countries consume at point E, which lies on a higher indifference curve II. This means they now enjoy more of both goods, 20 extra units of X and Y each, compared to their no-trade situation. The move from curve I

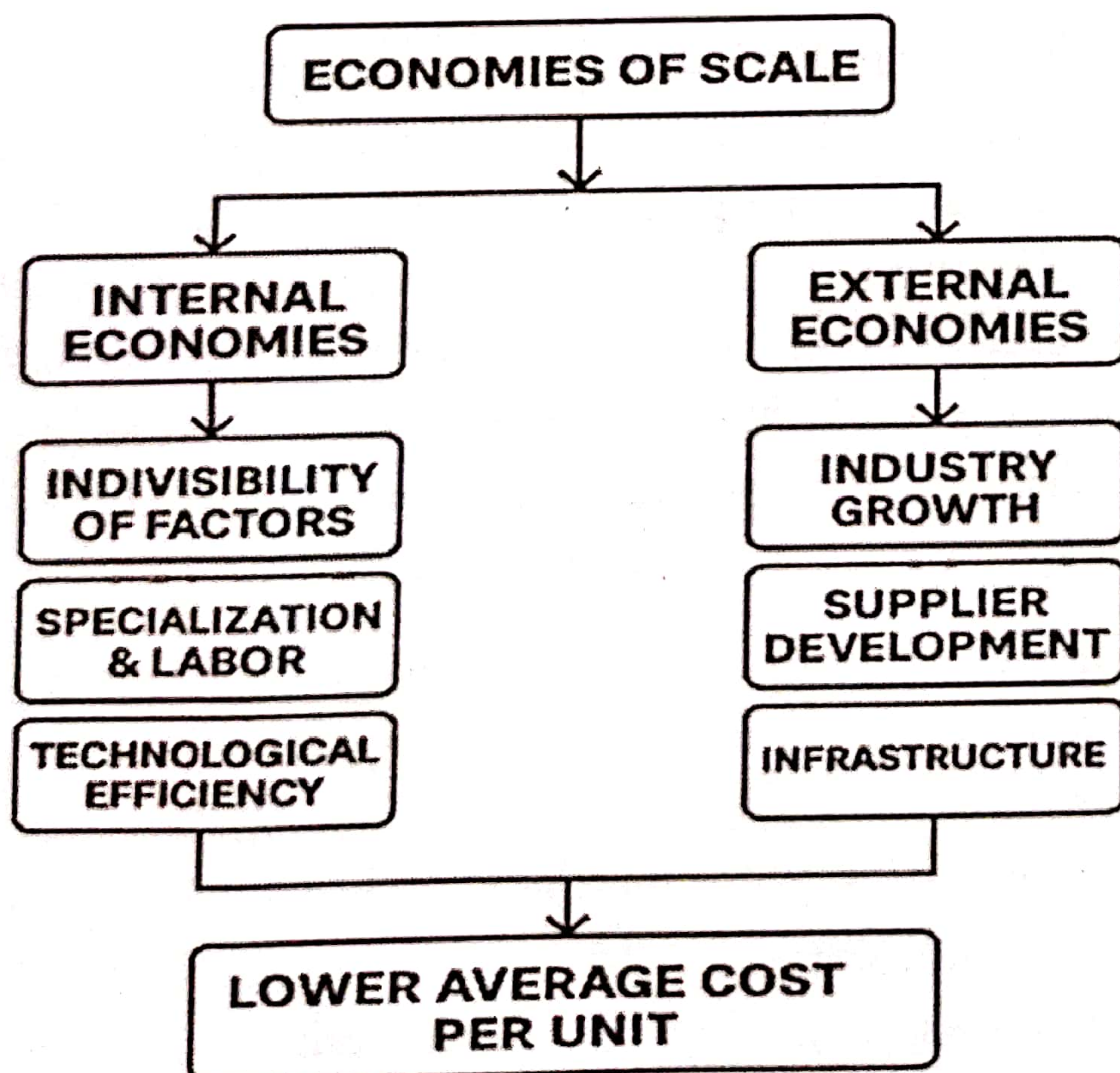
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to curve II shows that both countries have improved their utility or standard of living.

This example proves that even when countries are the same, they can still benefit from trade simply by specializing and taking advantage of economies of scale. The direction of specialization doesn't matter—it could go either way depending on small differences or historical factors. Furthermore, if increasing returns continue over a wide range of output, the market may be dominated by a few large producers, leading to monopoly or oligopoly. In modern times, similar ideas are applied through outsourcing and offshoring, where companies either buy parts from abroad or produce them in foreign countries to reduce costs and increase efficiency. These strategies also help take advantage of global economies of scale, though they raise concerns about job losses in domestic industries.

Limitations of economies of scale :

- **Management Complexity** : As a company gets bigger, it becomes harder to manage everything smoothly.
- **Lack of Flexibility** : Large companies may find it difficult to change quickly when the market or technology shifts.
- **More Bureaucracy** : Bigger firms often have many layers of management, which can slow down decisions.
- **Limited Resources** : There is physical or market limits that stop a company from growing forever or lowering costs more.
- **Risk of Diseconomies of Scale** : When a company grows too large, costs can rise because of problems like poor communication or unhappy workers.



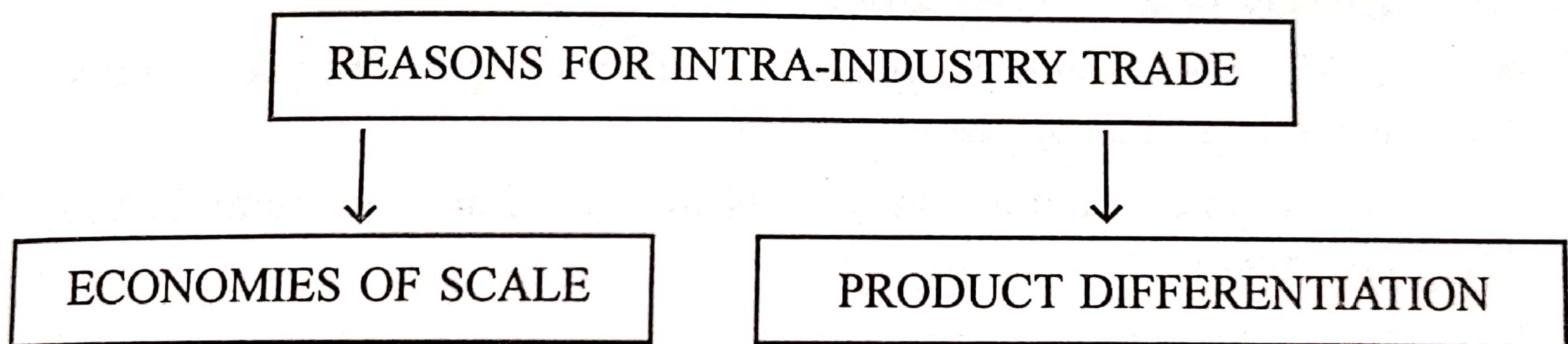
2.3 International Imperfect Competition

Concept of Intra-Industrial Trade

The traditional theory of international trade has assumed that commodities being traded were homogeneous or identical. It is assumed that all international trade is inter-industry trade, meaning that countries trade different goods with one another. But a characteristic of a country's trade that has appeared in many new theories and is increasingly recognized as important in the real world is intra-industry trade.

Intra-industry trade occurs when a country is both exporting and importing items in the same product classification category.

Traditional trade theory dealt only with inter-industry trade, but intra-industry trade constitutes an important segment of international trade.



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Making more of a product in one place often lowers the cost of each item. Instead of making all types of cars in small amounts, a country can specialize in making some types in large numbers and sell the extra to other countries. Other countries do the same, and they trade with each other. This way, everyone gets better products at lower prices.

Product Differentiation

Countries trade similar products because people like variety. For example, both India and Germany make cars, but German people may want to try Indian cars, and Indians may want German cars like BMW or Audi. Even though both make cars, the brands, styles, and features are different. So, countries trade to offer more choices to consumers.

There are some assumptions :

- Markets operate under imperfect competition.
- Firms produce differentiated products.
- Countries have similar resources and technology.
- Economies of scale exist in production.

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- Trade occurs in a single industry between two countries.
- There are many firms with free entry and exit.
- Consumers prefer variety in products.
- No transport costs or trade barriers.

Measurement of Intra-industry trade :

Measured by the intra-industry trade index (T), which is

$$T = 1 - \frac{|x - M|}{x + M} \quad (0 \leq T \leq 1)$$

- X represents the value of exports, and M represents imports of a particular industry or commodity group.
- $T = 0$, when a country only exports and only imports the good in question (there is no intra-industry trade).
- $T = 1$, when exports and imports of a good are equal (intra-industry trade is maximum).

2.4 KRUGMAN MODEL OF INTRA-INDUSTRY TRADE

It was developed by **Paul Krugman** in the late 1970s and early 1980s to explain why countries with similar resources and technology still trade similar but differentiated products.

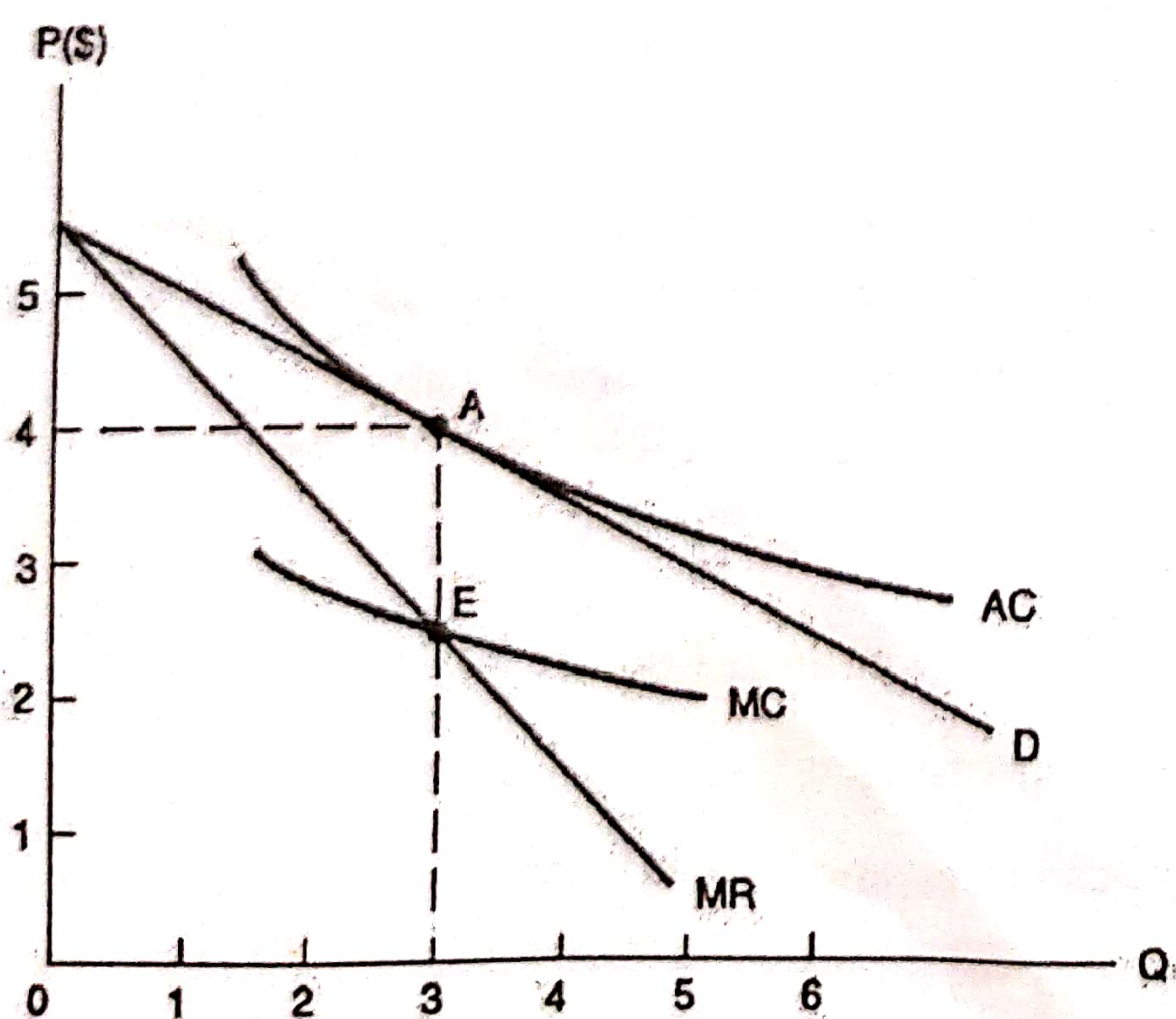


Fig. Intra-industrial trade

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On the horizontal axis (X-axis), we have the quantity (Q) of the product that the firm produces and sells. On the vertical axis (Y-axis), we have the price (P) of the product in dollars, which also includes cost levels like average cost (AC) and marginal cost (MC).

The curve labeled D is the firm's demand curve. It is downward sloping and relatively flat, meaning the firm faces elastic demand. This happens because many firms offer similar but not identical products, so a small price change can cause a large change in quantity sold. Because the firm must reduce its price on all units if it wants to sell more, its marginal revenue (MR) curve lies below the demand curve. This means that MR is always less than price.

For example, if the firm sells 2 units at \$4.50, total revenue is \$9. If it sells 3 units at \$4, total revenue becomes \$12. So, the marginal revenue from the third unit is \$3, even though the price is \$4, because lowering the price affects all units.

The firm also benefits from economies of scale. That means the more it produces, the lower the average cost (AC) becomes. So, the AC curve slopes downward. The MC curve lies below the AC curve because for the average cost to fall, the marginal cost must be less than the average cost. This is why both cost curves slope downward, with MC under AC.

The firm will choose the level of output where MR equals MC. In the diagram, this happens at point E, which is at $Q = 3$ units. This is the most efficient output level. From $Q = 3$, we go up vertically to reach the demand curve D, which gives the price the firm can charge. That's \$4, shown at point A. So, the firm produces 3 units and charges \$4 per unit. At this point, the price equals the average cost ($P = AC$), so the firm earns zero economic profit, or just a normal return. In the long run, more firms will enter the market if there are profits. Entry will make the demand curve tangent to the AC curve, so no firm earns excess profit.

Now connecting this to trade : Suppose Nation 1 is labor-rich and Nation 2 is capital-rich. If both countries make homogeneous products, they will do inter-industry trade: Nation 1 exports the labor-intensive good, and Nation 2 exports the capital-intensive good, based on comparative advantage. But if the products are differentiated, like different styles of cars or phones, then even though Nation 1 exports more of its product overall, it will also import other varieties of the same product from Nation 2, and vice versa.

This is called intra-industry trade, which happens due to product variety and economies of scale. So, both countries import and export similar goods.

In simple terms, people in both nations want different varieties, and firms want to lower costs by producing more. That's why trade happens even between similar countries. When nations are similar in technology and resources, intra-industry trade becomes more important than inter-industry trade. Over time, as industrial countries became more alike, intra-industry

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trade has grown more than traditional comparative advantage trade.

So, the diagram shows how a firm works in such a market: choosing output where $MR = MC$, setting price where the D curve meets that quantity, and breaking even in the long run. This behavior supports the idea of intra-industry trade based on differentiated products and economies of scale.