

# OUTLINE

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# 6.1 Introduction

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- Two difficulties with the H-O theory:
  - (1) Some questions remain regarding the empirical validity of the theory.
  - (2) This implies that a great deal of today's international trade still left unexplained.
- ✓ This chapter fills this gap with some new trade theories, which base international trade on economies of scale, imperfect competition, and differences in the development and spread of new technologies over time among nations.

## 6.2 The H-O Model and New Trade Theories

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### ■ Validity of the assumptions of the H-O Model

(1) There are two nations, two commodities, and two factors of production.

⇒ O.K. Increasing the numbers does not change the major findings of the H-O model.

(2) Both nations use the same technology in production.

⇒ Differences in technologies among nation: this can be explained by the technology gap and product cycle models (Section 6.5).

(3) Commodity X is labor intensive, and commodity Y is capital intensive in both nations.

⇒ O.K. Factor-intensity reversal is not very common in the real world.

## 6.2 The H-O Model and New Trade Theories

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### ■ **Validity of the assumptions of the H-O Model**

(4) Both commodities are produced under constant returns to scale in both nations.

⇒ Economies of scale can be also a basis for trade (Section 6.3). This results in intra-industry trade.

(5) There is incomplete specialization in production in both nations.

⇒ O.K.

(6) Tastes are equal in both nations.

⇒ O.K.

(7) There is perfect competition in both commodities and factor markets in both nations.

⇒ Imperfect competition: Product differentiation under monopolistic competition can also result in intra-industry trade (Section 6.4).

## 6.2 The H-O Model and New Trade Theories

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### ■ **Validity of the assumptions of the H-O Model**

(8) There is perfect factor mobility within each nation but no international factor mobility.

⇒ O.K.

(9) There are no transportation costs, tariffs, or other obstructions to the free flow of international trade.

⇒ O.K. (only reduce the volume of trade, but not the pattern of trade.)

(10) All resources are fully employed in both nations.

⇒ O.K.

(11) International trade between the two nations is balanced.

⇒ O.K.

## 6.3 Economies of Scale and International

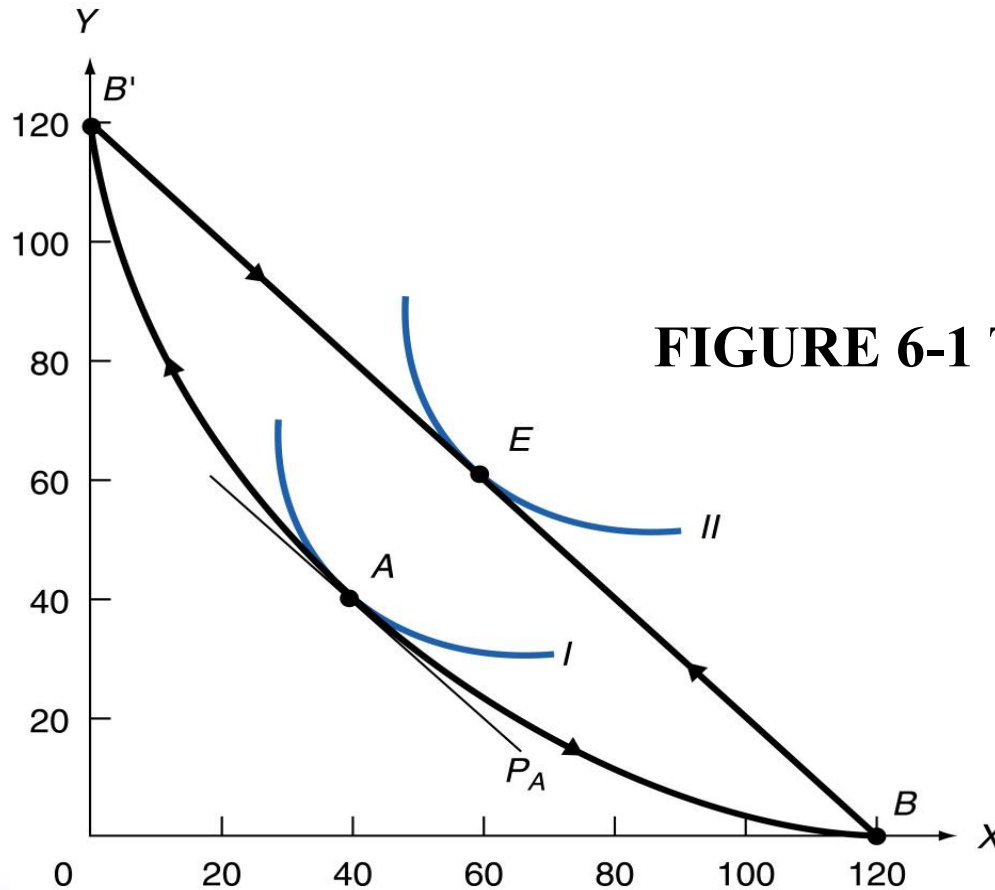
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### 6.3A. Assumptions

- (1) There are two nations (N1, N2) two commodities (X, Y)
- (2) Both nations use the same technology in production.
- (3) Neither commodity is labor intensive or capital intensive.
- (4) Both commodities are produced under increasing returns to scale in both nations.
  - i.e., Output grows proportionately more than the increase in inputs of production. (eg., If all inputs are doubled, output is more than doubled: Economies of scale.)
- (5) Tastes are equal in both nations.

# 6.3 Economies of Scale and International

## 6.3B. Explanation



**FIGURE 6-1** Trade Based on Economies of Scale

## 6.3 Economies of Scale and International

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### 6.3B. Explanation

- **Some aspects of the analysis:**

- (0) With trade, each nation becomes completely specialized in the production of one commodity.
- (1) Which of the two commodities each nation becomes specialized may result from historical accident.
- (2) In real world, the nations need not be identical in every respect.
- (3) Eventually, one or a few firms in the nation will capture the entire market for a given product, leading to monopoly or oligopoly.



## 6.3 Economies of Scale and International

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### 6.3C. Related Sources of International Trade

#### (1) International economies of scale (Case Study 6-1)

- Products manufactured by international corporations have parts and components made in many different nations.
- During the past decade or so, there has been a sharp increase in international trade in parts and components, as well as in setting up of production facilities abroad, and these have been the source of new and significant international economies of scale.

## 6.3 Economies of Scale and International

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### 6.3C. Related Sources of International Trade

#### (2) External economies (Appendix)

- Internal economies (economies of scale or increasing returns of scale) refer to the reduction in the average costs of production as the firm's output expands. (Thus, economies of scale are internal to the firm.)
- External economies refer to the reduction in each firm's average costs of production as the entire industry output expands. (Thus, economies of scale are external to the firm.)
- In this case the nation where a given industry is larger is likely to have lower average costs of production and thus to be the exporter of the commodity

## 6.3 Economies of Scale and International

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### 6.3C. Related Sources of International Trade

#### (3) Linder Hypothesis (1961)

- "A nation exports those manufactured products for which a large domestic market exists."
- Explanation: In the process of satisfying a large domestic market, the nation acquires the necessary experience and efficiency to be able subsequently to export these commodities to other nations with similar tastes and income levels.

# 6.4 Imperfect Competition and International Trade

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## 6.4A. Trade Based on Production Differentiation

### (1) Product differentiation and monopolistic competition

- Differentiated products: "Neither identical products, nor different products". E.g., Cars, TV sets, etc.
- Cf: Standardized (homogeneous) products: "Identical products." E.g., Most of the agricultural products and labor intensive products.
- Monopolistic competition: The market organization where there are many firms selling a differentiated product and entry into or exit from the industry is easy.

# 6.4 Imperfect Competition and International Trade

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## 6.4A. Trade Based on Production Differentiation

- Cf: Perfect competition vs. Monopoly
- Thus differentiated products are usually produced under monopolistic competition.

### (2) Product differentiation and intra-industry trade

- Intra-industry trade: a phenomenon of international exchanging differentiated products of the same industry. (As a result of economies of scale, product differentiation under monopolistic competition.)
- Inter-industry trade: a phenomenon of exchanging completely different products. (H-O model)

## 6.4 Imperfect Competition and International Trade

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- **Key characteristics of Intra-industry trade:**
  - (1) While inter-industry trade (eg., trade in the H-O model) is based on comparative advantage among nations, intra-industry trade is based on product differentiation and economies of scale.
  - (2) With intra-industry trade, pretrade-relative commodity prices may no longer accurately predict the pattern of trade.
  - (3) While the H-O model predicts that trade will lower the return of the nation's scarce factor, with intra-industry trade it is possible for all factors to gain.

## 6.4 Imperfect Competition and International Trade

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- **Key characteristics of Intra-industry trade:**
  - (4) Intra-industry trade is related to the sharp increase in international trade in parts and components of a product.
  - (5) Intra-industry trade arises more between nations with similar tastes and income levels.
  - (6) While most of the trade between developed and developing countries is inter-industry trade, an increasing proportion of the trade among industrial countries is intra-industry trade.

# 6.4 Imperfect Competition and International Trade

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## 6.4B. Measuring Intra-Industry Trade

- Intra-industry trade index (Grubel-Lloyd index):

$$T = 1 - |X - M| / (X + M)$$

- ✓ If  $T = 1$ , perfect intra-industry trade.
- ✓ If  $T = 0$ , perfect inter-industry trade.



# 6.4 Imperfect Competition and International Trade

- Case Study 6-3 Growth of Intra-Industry Trade

Country	1988-1991	1996-2000	Country	1988-1991	1996-2000
France	75.9	77.5	Denmark	61.6	64.8
Canada	73.5	76.2	Italy	61.6	64.7
Austria	71.8	74.2	Poland	56.4	62.6
United Kingdom	70.1	73.7	Portugal	52.4	61.3
Mexico	62.5	73.4	Korea	41.4	57.5
Hungary	54.9	72.1	Ireland	58.6	54.6
Switzerland	69.8	72.0	Finland	53.8	53.9
Germany	67.1	72.0	Japan	37.6	47.6
Belgium/Luxembourg	77.6	71.4	New Zealand	37.2	40.6
Spain	68.2	71.2	Turkey	36.7	40.0
Netherlands	69.2	68.9	Norway	40.0	37.1
United States	63.5	68.9	Greece	42.8	36.9
Sweden	64.2	66.6	Australia	28.6	29.8

*Table 6.2 Manufacturing Intra-Industry Trade as a Percentage of Total Manufacturing Trade in Selected Countries.*

# 6.5 Trade Based on Dynamic Technological Differences

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## 6.5A. Technological Gap and Product Cycle Models

### (1) Technological gap model by Posner (1961)

- As the most technological advanced nation, the U.S. exports a large number of new high-tech products. However, as foreign producers acquire the new technology they eventually are able to export the products to the U.S. markets, because of their lower labor costs.
- In the meantime, U.S. producers may have introduced still newer products and production processes and may be able to export these products based on the new technology gap established.
- Shortcomings: it does not explain why technology gaps arise or how they are eliminated over time.

# 6.5 Trade Based on Dynamic Technological Differences

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## 6.5A. Technological Gap and Product Cycle Models

### (2) Product cycle model by Vernon (1966)

- Most manufactured products have a kind of life cycles, similarly to the human beings: New-product phase (I), Growth phase (II), Maturity phase (III), Decline stage (IV) (V)
- Stage I: Product is produced and consumed only in the innovating country.
- Stage II: Production is perfected in the innovating country and increases rapidly to accommodate rising demand at home and abroad. The innovating nation has a monopoly in both the home and export markets.

# 6.5 Trade Based on Dynamic Technological Differences

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## 6.5A. Technological Gap and Product Cycle Models

(2) Product cycle model by Vernon (1966) (*continued*)

- Stage III: The product becomes standardized and the innovating firm may find it profitable to license other domestic and foreign firms to also manufacture the products. Thus the imitating country starts producing the product for domestic consumption.
- Stage IV: The imitating country begins to undersell the innovating country in third markets, and production of the product in the innovating country declines.
- Stage V: The imitating country starts underselling the innovating country in the latter's markets as well, and production of the product in the innovating country declines rapidly or collapses.

# 6.5 Trade Based on Dynamic Technological Differences

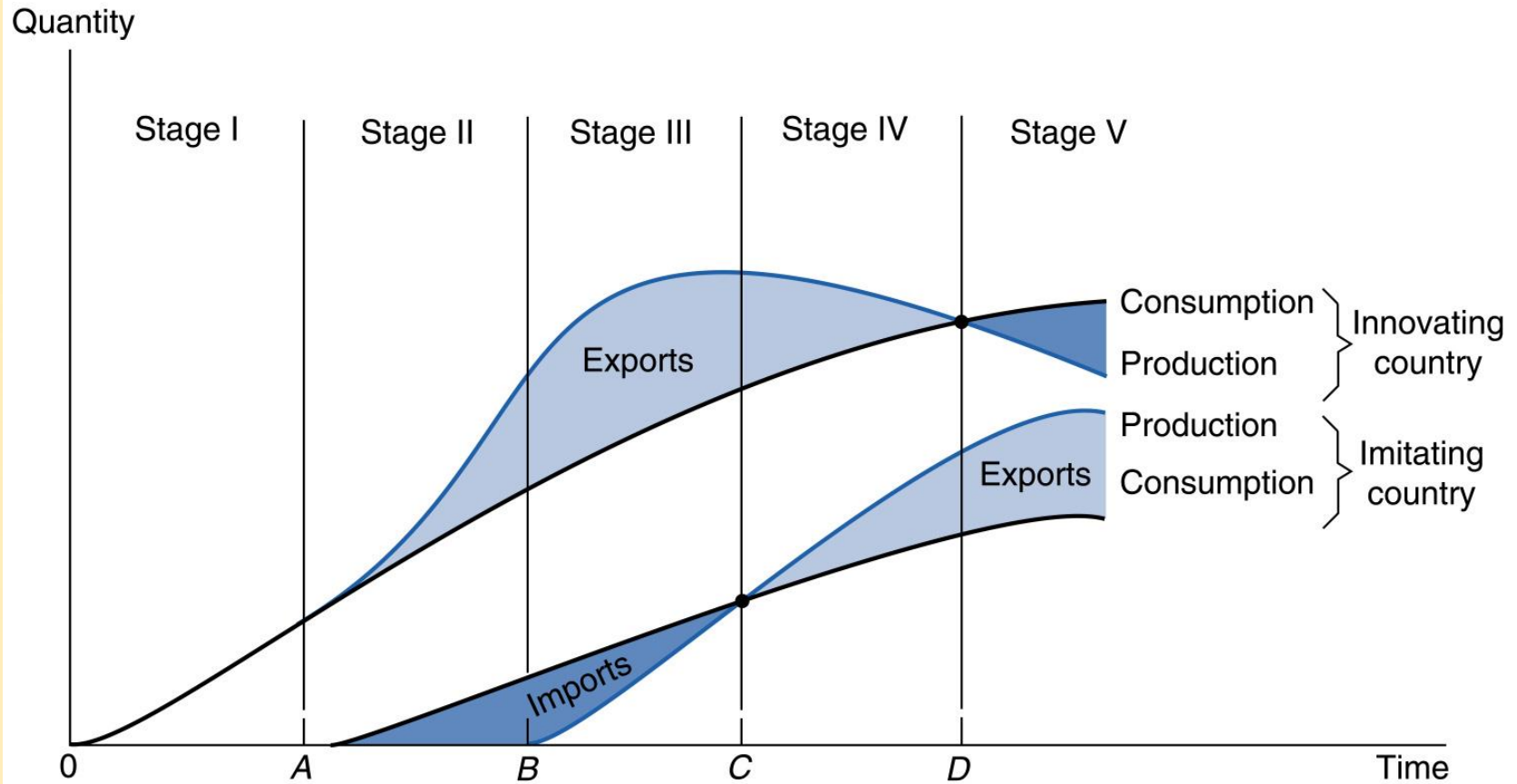


FIGURE 6-4 The Product Cycle Model.

# 6.6 Transportation Costs and International Trade

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