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INTERNATIONAL ECONOMICS

5 Factor Endowments and the Heckscher-Ohlin Theory

Introduction

- Extending trade model to include:
  - ✓Basis of **comparative advantage**
  - ✓Effect of **international trade** on **return** to **labor**
- Explain how **comparative advantage** is based on differences in factor endowments across nations.
- Explain how **trade affects relative factor prices** WITHIN and ACROSS nations.

Assumptions of the Theory

- **Heckscher-Ohlin theory** based on following assumptions:
  1. Two nations, two goods, two factors of production
  2. Technology is the same in both nations
  3. Commodity X is **labor intensive**, commodity Y is **capital intensive** in both nations
  4. **Constant returns** to scale for X and Y in both nations
  5. **Incomplete specialization** in production in both nations

6. **Tastes** are the **same** in both nations
7. Both **commodities** and **factors** are traded in perfectly **competitive markets**
8. Perfect factor mobility within each nation, but not between nations
9. No transportation costs, tariffs or other barriers to free trade.
10. All resources are fully employed in both nations
11. International trade between the nations is balanced.

Factor Intensity, Factor Abundance, and the Shape of the Production Frontier

- **Factor Intensity**
  - In a two-commodity, two factor world, commodity Y is ***capital intensive*** if the capital-labor ratio (K/L) used in the production of Y is greater than K/L used in the production of X.
  - It is not the **absolute amount of capital** and labor used in production of X and Y, but the amount of ***capital per*** *unit of labor* that determines capital intensity.
  - It is a **relative term**.

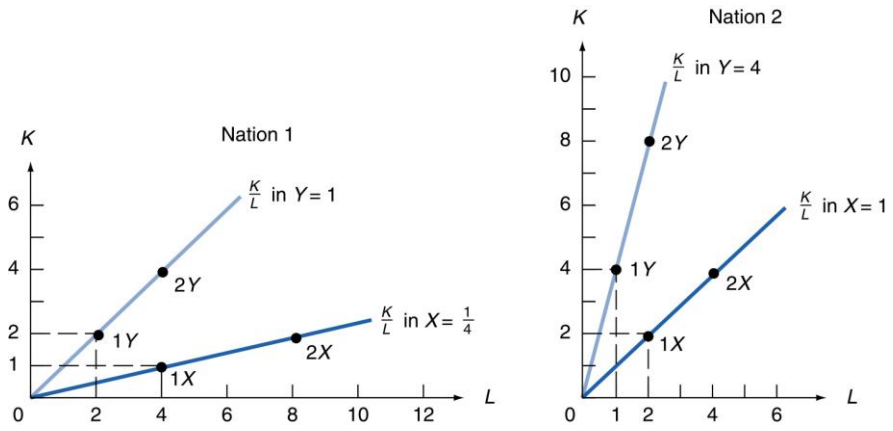

FIGURE 5-1 Factor Intensities for Commodities X and Y in Nations 1 and 2.

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Factor Intensity, Factor Abundance, and the Shape of the Production Frontier

Factor Abundance

- **Two ways to define factor abundance:**

1-In terms of physical units:

- Nation 2 is capital abundant if the ratio of the total amount of capital to the total amount of labor (TK/TL) available in Nation 2 is greater than that in Nation 1.
- It is not the absolute amount of capital and labor available in each nation, but the ***ratio*** of the total amount of capital to the total amount of labor.

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2- In terms of relative factor prices:

- Nation 2 is capital abundant if the ratio of the **rental price of capital** to **the price of labor time** (P_K/P_L) is lower in Nation 2 than in Nation 1.
- Rental price of capital is usually considered to be the **interest rate** (r), while the price of labor time is the **wage rate** (w), so $P_K/P_L = r/w$.
- It is not the **absolute level** of r that determines whether a nation is K-abundant, but **r/w**.

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The relationship between the two definitions of factor abundance is clear.

- The definition of factor abundance in terms of **physical units** considers only the **supply** of factors.
- The definition in terms of **relative factor prices** considers both **demand** and **supply**.
- If **demand** is significantly **different** between the two countries the two definitions may not give the same conclusion. In such situations, it is the definition in terms of **relative factor prices** that should be used.

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But,

- Since we have assumed that **tastes**, or **demand preferences**, are the same in both nations, the **two definitions of factor abundance** give the same conclusions in our case.

Factor Abundance and the Shape of the Production Frontier

- Since Nation 2 is K-abundant and Y is K-intensive, Nation 2 can produce relatively more of Y than Nation 1.
- Since Nation 1 is L-abundant and X is L-intensive, Nation 1 can produce relatively more of X than Nation 2.
- This gives a production frontier for Nation 1 that is relatively flatter and wider that that of Nation 2.

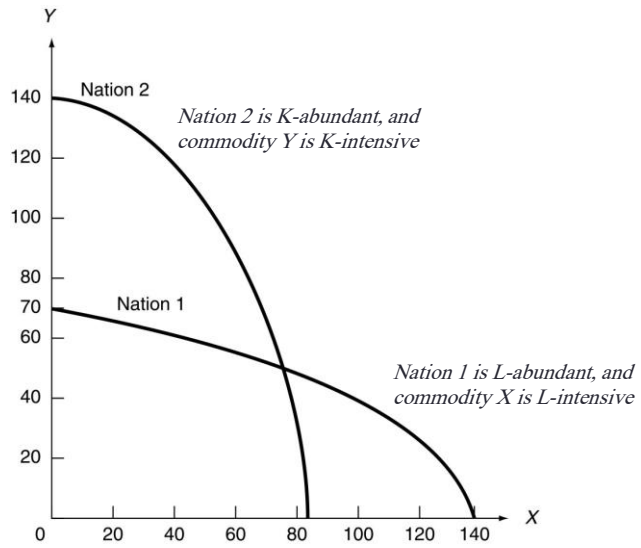

FIGURE 5-2 The Shape of the Production Frontiers of Nation 1 and Nation 2.

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Factor Endowments and the Heckscher-Ohlin Theory

- **Heckscher-Ohlin (H-O) theory** is based on two theorems:

1. the H-O theorem (which deals with and predicts the pattern of trade)
2. and the factor-price-equalization theorem (which deals with the effect of international trade on factor prices).

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1. The H-O theorem

- A nation will **export** the **commodity** whose production requires the **intensive** use of the **nation's relatively abundant** and **cheap** factor.
- and A nation will **import** the commodity whose production requires the intensive use of the nation's relatively scarce and expensive factor.

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In short,

- the relatively labor-rich nation exports the relatively labor-intensive commodity and imports the relatively capital-intensive commodity.
- *Explains* comparative advantage rather than assuming it.

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- The H-O theorem **isolates** the difference in **relative** factor abundance, or factor endowments, among nations as the basic cause of **comparative** advantage and **international** trade.
- For this reason, it is known as factor-proportions or factor endowment theory.
- It shows that the difference in relative factor abundance and prices is the cause of **pretrade difference** in relative commodity prices between two nations.

Illustration of the Heckscher–Ohlin Theory

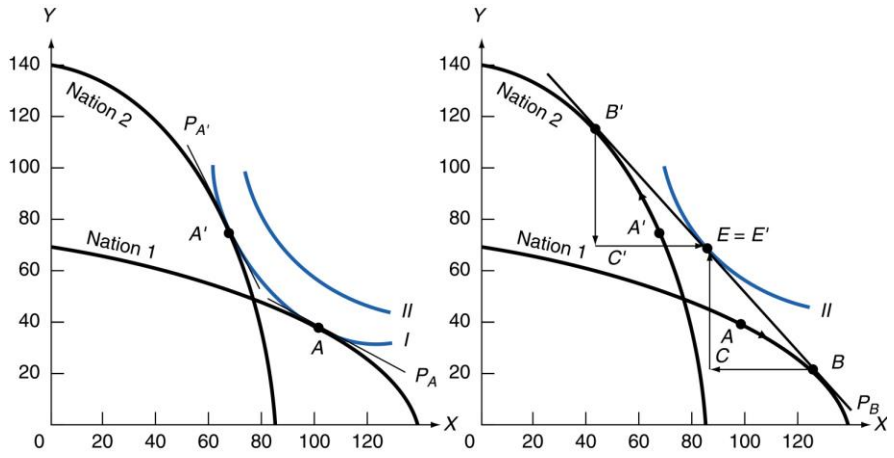

FIGURE 5-4 The Heckscher-Ohlin Model.

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The End