

CHAPTER SIX

## International Economics

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Economies of Scale,  
Imperfect Competition, and International  
Trade

## Trade Based on Dynamic Technological Differences

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Through this model we will explain trade on basis of **dynamic change in technology** among **nations**. These theories include:

- 1- the technological gap
  - 2- product cycle models.
- Since **time** is involved in a fundamental way in both of these models, they can be regarded as **dynamic extensions** of the **static H–O** model.
  - By **dropping** the assumption of **same production technology** in all countries.

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## Technological Gap model (Posner in 1961)

- This model explains differences between nations according to the **introduction of new products and new production processes**.  
(i.e. **new technology** and **new products** creating a **technology gap** between the nation and other nations.)
- When a firm innovates a **new production technique** or new technology or new product usually in technologically advanced nation.
- These give the innovating firm and nation a **temporary monopoly** in the world market due to the **technological gap** created.

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### A temporary monopoly: Why?

- Such a **monopoly** is **temporary** because it fades over time, as **foreign producers** acquire the **new technology** they imitate the product and may acquire the market if they have lower labor costs (which is usually the case).
- This **decreases** the **technology gap** and the **new producer** may be the **exporter** of the good often some time.
- Such a **temporary monopoly** is often based on **patents** and **copyrights**, which are granted to stimulate the flow of inventions.

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### Two shortcomings of this model:

The model **does not**:

- ✓ explain the **size** of **technological** gaps
- ✓ explore the reason that **technological** gaps **arise** or exactly how they are **eliminated** over time.

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## Product Cycle Model (Vernon, 1966)

- This model is considered as a **generalization** and extension of the technological gap model
- It **explains trade** based also on the introduction of **new technology and products**.



### According to this model,

when a **new product** is introduced, it usually requires **highly skilled** labor to produce.

- As the **product matures** and acquires mass acceptance, it becomes **standardized**; it can then be produced by **mass production techniques** and **less skilled labor**.
- **Therefore, comparative advantage** in the product **shifts** from the **advanced** nation that originally introduced it to **less advanced** nations, where **labor** is relatively **cheaper**.
- This may be accompanied by **foreign direct investments** from the innovating nation to nations with cheaper labor.

## Remarks on the technological gap and product cycle models :

- According to these models, the most highly industrialized economies are expected to:
  - ✓ export **non-standardized** products embodying new and more **advanced technologies**
  - ✓ and import products embodying old or **less advanced technologies**. (less advanced technology intensive).
- While the technological gap model emphasizes the **time lag** in the imitation process, the product cycle model stresses the **standardization** process.

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- Trade in these **two** models is based on changes in **relative factor abundance (technology)** among nations over time.
- Therefore, they can be regarded as **extensions of the basic H–O model** into a technologically dynamic world, rather than as alternative trade models.
  - **Since** trade in these models is originally based on **new technology developed** by the **relatively abundant factors** in industrialized nations (such as highly skilled labor and expenditures on research and development).

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- Subsequently, through **imitation** and **product standardization**, less developed nations gain a comparative advantage based on **their relatively cheaper labor**.
- **In short**, the product cycle model tries to explain **dynamic comparative advantage** for new products and new production processes, as opposed to the basic H–O model, which explains static comparative advantage.

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### Illustration of the Product Cycle Model

- **Five different stages** in the life cycle of a product:

#### Stage I (new-product phase)

- Represented by time  $OA$  on the horizontal axis
- The product (at this time a specialty) is produced and consumed only in the innovating country.

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## Stage II (product-growth phase )

- Represented by **time  $AB$**  on the horizontal axis
- Production is **perfected** in the **innovating country** and increases rapidly to accommodate **rising demand** at **home** and **abroad**.
- At this stage, there is not yet any **foreign production** of the product, so that the innovating country has a **monopoly** in both the **home** and **export** markets.

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## Stage III (product-maturity Phase )

- Represented by **time  $BC$**  on the horizontal axis
- The product becomes **standardized**, and the innovating firm may find it **profitable** to **license** other **domestic** and **foreign firms** to also manufacture the product.
- Thus, the **imitating country** starts **producing** the product for **domestic consumption**.

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### Stage IV (Product-decline Stage)

- Represented by **time *CD*** on the horizontal axis
- The imitating country, facing lower labor and other costs now that the product has become standardized and no longer requires development and engineering skills, begins to undersell the innovating country in third markets, and production of the product in the innovating country declines. Brand competition now gives way to price competition.

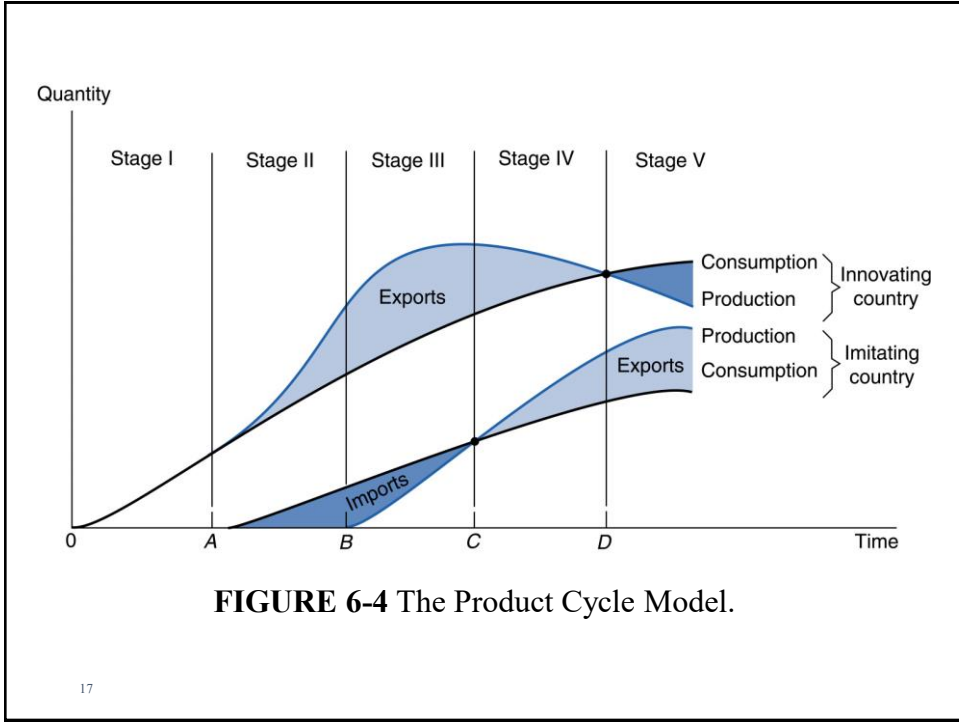
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### Stage V (Product-decline Stage)

- Represented by **time (Past point D)** on the horizontal axis
- The imitating country **starts underselling** the innovating country in the latter's market as well, and **production** of the product in the **innovating country declines** rapidly or collapses.
- **Technological diffusion, standardization, and lower costs** abroad thus bring the end of the life cycle for the product.
- The **innovating country** start concentrating attention on **new technological** innovations and to introduce new products.

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Note: Stages IV and V are often referred to as the product-decline stage.



**The End**

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