EE451

Alternative Theories of Trade: Post H-O Theorem

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Alternative Theories

- The Imitation Lag and Product Cycle (Posner, 1961)
- The Linder Theory
- Increasing Returns with Monopolistic Competition (Krugman, 1979)
- External Economies of Scale

- Intra-Industry Trade

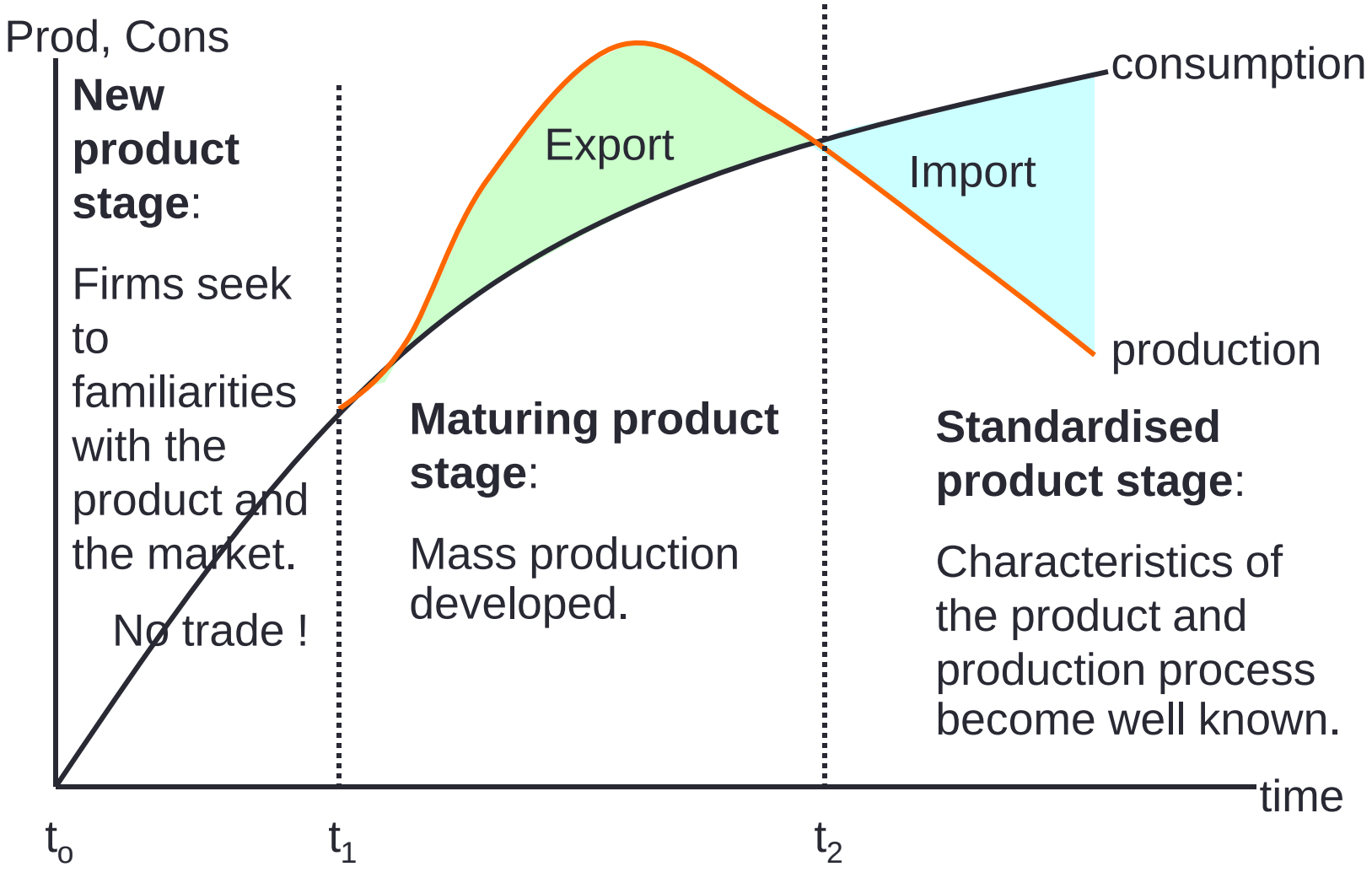
Product Cycle Theory

- Make use of the sequence of innovation and imitation.
- Assumes
  - the same technology is NOT always available in all countries
  - there is a delay in the transmission or diffusion of technology from one country to another.
- Imitation lag: the length of time that elapses between the product's introduction in country I and the appearance of the version produced by firms in country II.
  - Learning period (acquiring technology and know-how in order to produce the product) plus Time to purchase inputs, install equipment, process the inputs and bring the finished product to market.
- Demand lag: the length of time between the product's appearance in country I and its acceptance by consumers in country II as a good substitute for the products currently consumed.

Product Cycle Theory

- Net lag = imitation lag – demand lag
- 3 stages of product life
  - New
  - Maturing
  - Standardised.
- In fact, it postulates a DYNAMIC comparative advantage because the country source of exports would shift throughout the life cycle of the product.

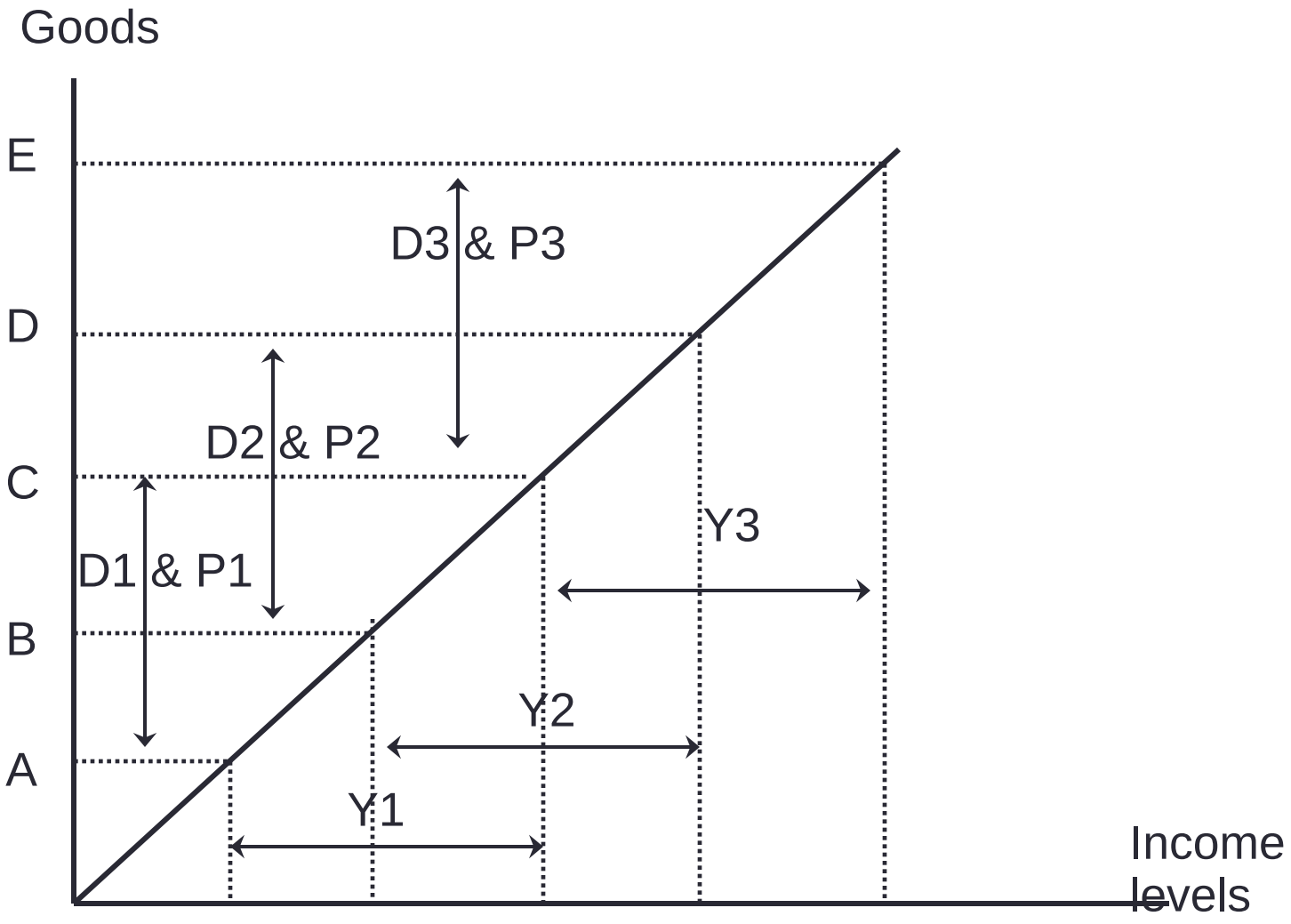
Product Cycle Theory



The Linder Theory (1961)

- H-O: supply-oriented
- L-T: demand-oriented
  - Tastes of consumers are conditioned strongly by their income levels
  - The per capita income level of a country will yield a particular pattern of tastes.
- Overlapping Demand

The Linder Model (1961)



The Linder Model

- International trade in manufactured goods is more intense between countries with similar per capital levels than between countries with dissimilar per capita income levels.
- This conclusion is consistent with aspects of the product cycle theory.
- But did not identify the direction in which any given good would flow.

Increasing Returns to Scale

- Reasons for IRS (or economies of scale)
  - Indivisibilities of resources
  - Division of labour
  - specialisation
  - Once-and-for-all inputs (such as designing of an automobile and the proofreading of a book need no increase at all as output expands.)
- Internal economies, whereby growth of an individual firm causes cost reductions ➔ downward sloping AC
- External economies, pertaining to the *industry level* ➔ downward shift of the AC

Increasing Returns to Scale

- Assume two countries experiencing ***external*** economies of scale, making reduction in the cost when an industry grows ➔ PPF is convex

- Implication to market structure ➔ capable of capturing the majority of the entire market ➔ oligopoly/monopoly

Implication to PPF & gains from trade

Monopolistic Competition

- Krugman model: internal EOS
- Differentiated products, such as varieties of car models
  - Combined with IRS can easily explain intra-industry trade.
- Implications to gains from trade
  - Consumers gain access to greater variety.
  - Unit costs and price decline.
- Then the gains from trade are normally larger under monopolistic competition.

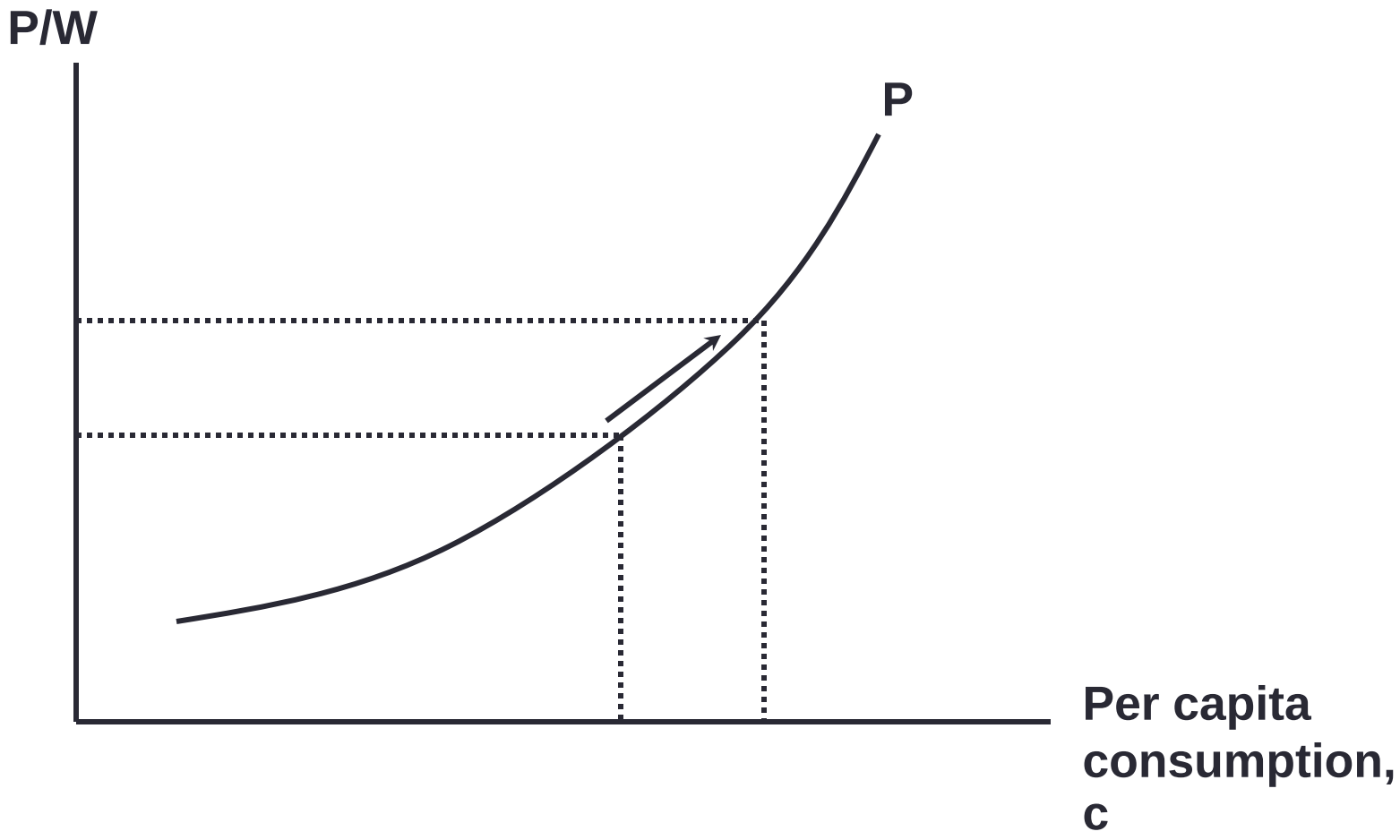
Krugman Model (1979)

- Basic features:
  - Economies of scale
    - Assume labour be the only factor of production
    - Scale economies are incorporated in the equation of labour requirement: L = a + bQ
  - Monopolistic competition
    - Recall $P = MR\left[\frac{\varepsilon_d}{\varepsilon_d + 1}\right]$
    - Profit-max condition: MR = MC, so $P = MC\left[\frac{\varepsilon_d}{\varepsilon_d + 1}\right]$

Krugman Model (1979)

- Moving along a demand downward to the right, Q increases, and ε_d lowers.
- Thus, the expression $\left[\varepsilon_d / \left(\varepsilon_d + 1\right)\right]$ increases.
- That is, P/W rises as consumption increases

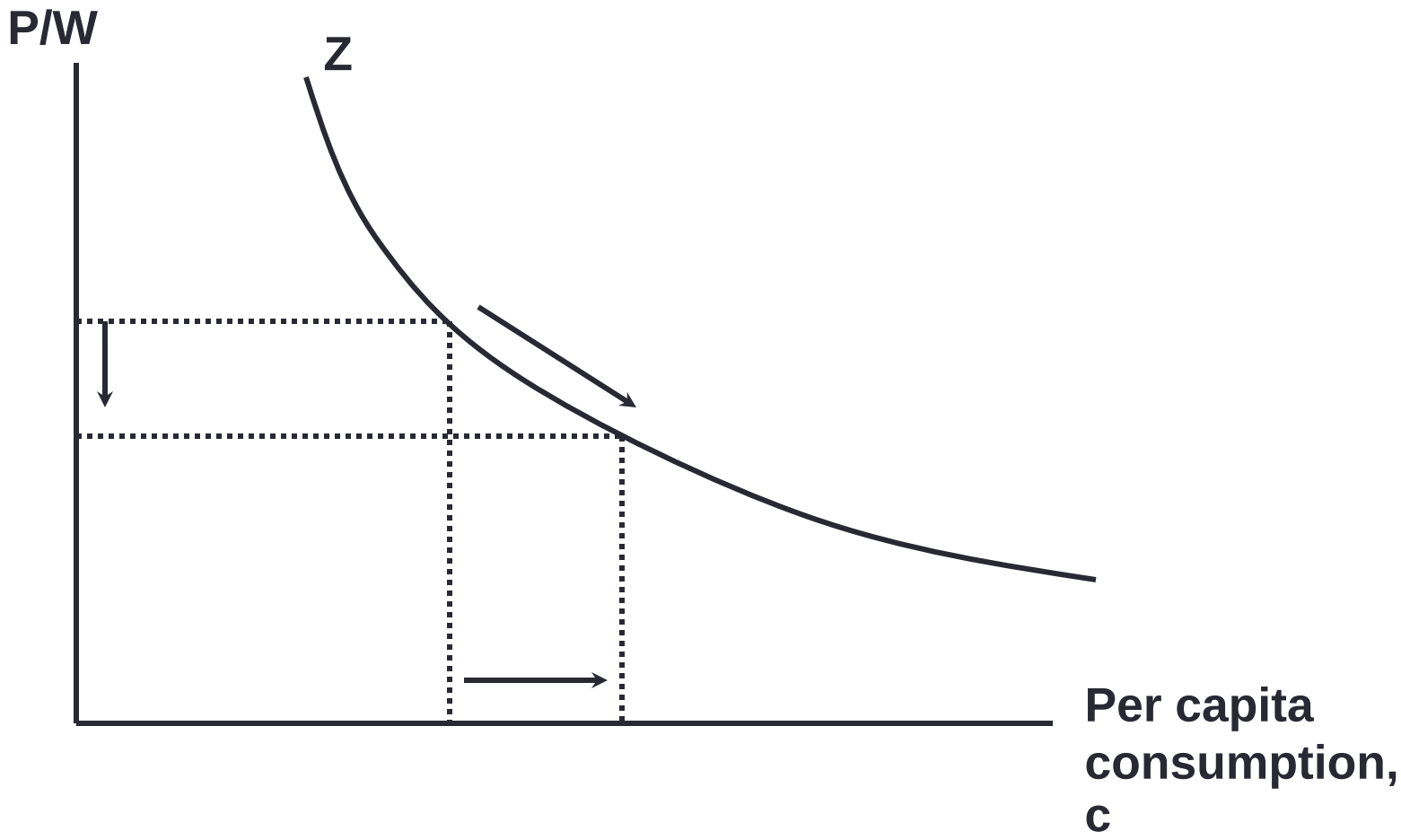
Krugman Model



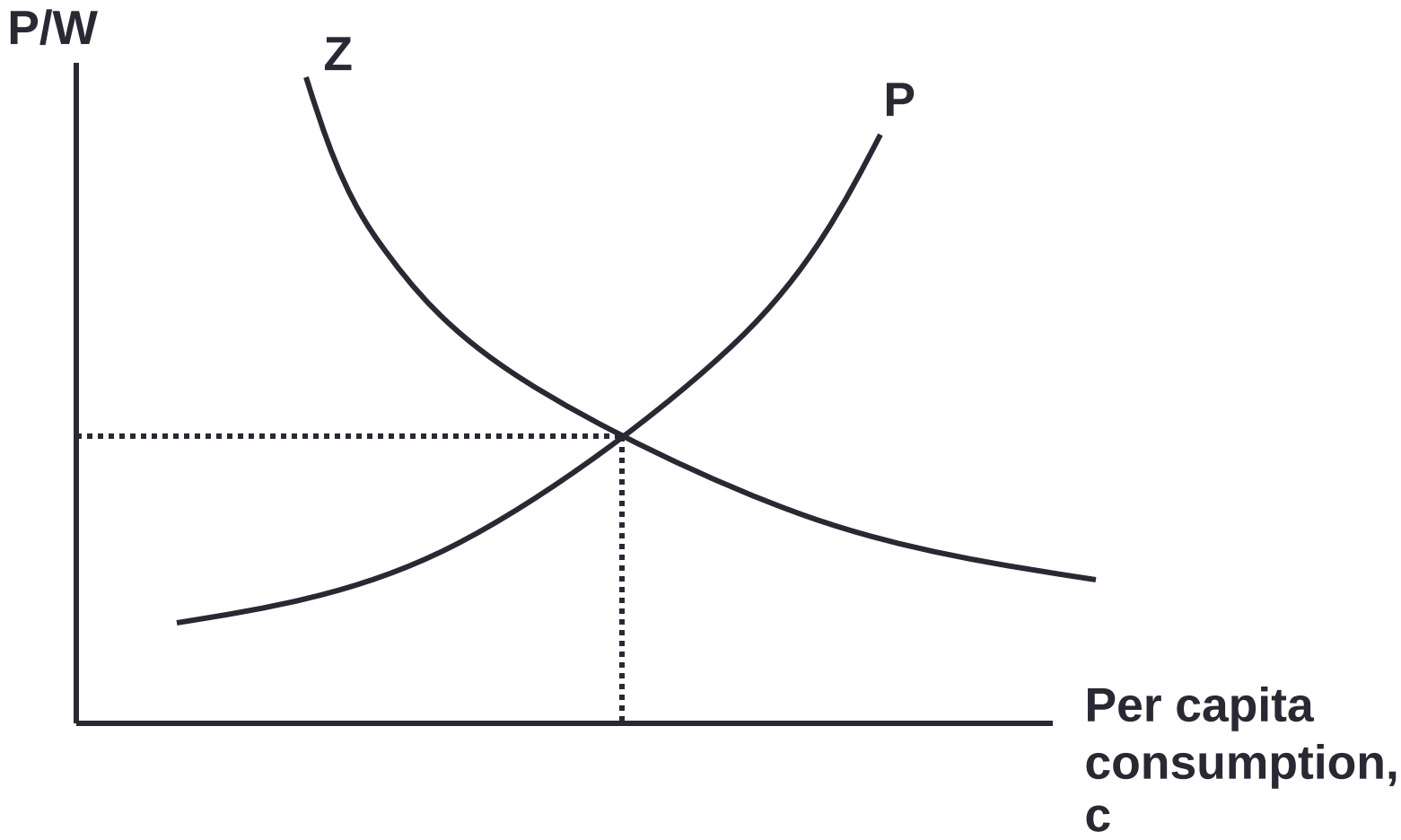
Krugman Model

- Now think about long-run equilibrium: production takes pace where P = ATC
- As c increases, AC falls (due to internal EOS)
- Hence, to maintain ‘normal’ profit, P must be reduced.

Krugman Model



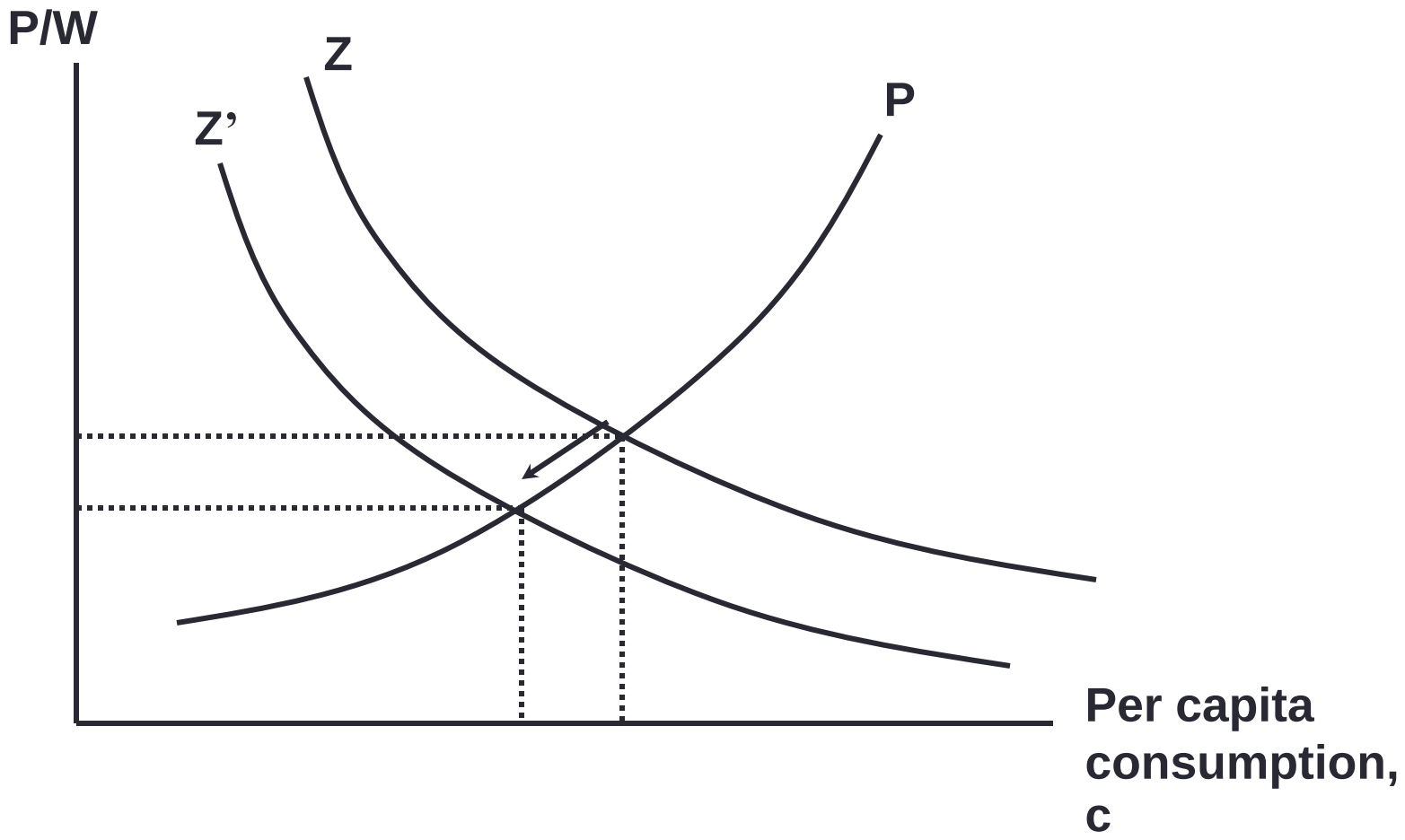
Krugman Model: Equilibrium



When trade is opened

- Market size is enlarged for each representative firm in each industry due to greater number of potential buyers.
- If the firm's total output is held constant, there is less per capita consumption of this firm's product at each P/W than was previously the case. (consumption now spreads to newly available products !)
- Shift Z to the left.

Krugman Model



When trade is opened

- (P/W) falls and c of this firm falls.
- But total consumption of this firm's product increases (due to enhanced market size after trade).
- Then (W/P) increases.
- Trade causes
  - An improvement in real income and a corresponding increase in output of all goods.
  - Consumers now have foreign products available to them as well as home-produced goods. ➔ increased product variety and consumer choice.

When trade is opened

- So this model can explain trade between similar countries, and existence of gains for all consumers.
- Krugman (1983):
  - "**factor endowments can determine the broad range of types of goods a country will export and import; but within that broad range, product differentiation and scale economies play a very important role in generating trade and gains from trade".**

Gravity Model

- Predict the volume of trade on a bilateral basis between any two countries which depend on
  - National income of two countries (ability to purchase & capacity to produce) or population size (to indicate market size and perhaps economies of scale)
  - Some measure of distance (as a proxy for transportation costs)
  - Variable reflecting an economic integration arrangement between two countries (eg: FTA)

Specification of the Gravity Model

Intra-Industry Trade

- Trade in the same product category.
- Basic reasons for IIT
  - Product differentiation
  - Transport costs
  - Dynamic economics of scale
  - Degree of product aggregation
  - Differing income distributions in countries
  - Differing factor endowments and product variety

Intra-Industry Trade

- How to measure IIT

GRUBEL,HERBERT G., AND PETER J. LLOYD. 1971. “The Empirical Measurement of Intra-Industry Trade.” Economic Record 47 (4): 494–517.

$$I = 1 - \frac{\sum \left| \left(X_i / X \right) - \left(M_i / M \right) \right|}{\sum \left[\left(X_i / X \right) + \left(M_i / M \right) \right]}$$

I = 1: ‘total’ intra-industry trade ➔ a country’s exports and imports within a given industry are equal.

I = 0: a country either exports or imports, not both, according to what comparative advantage model predicts.