International Trade and Policy

WEEK 4 – **Trade Theory II – Beyond Comparative Advantage**

University: **Tajik State University of Commerce**
Lecturer: **Abduvaliev Mubinzhon, PhD**

Beyond Comparative Advantage

Souce: Freepik. (n.d.). *International trade vectors*. Retrieved April 8, 2026, from https://www.freepik.com/vectors/international-trade

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SECTION 1: Introduction – The Limits of Comparative Advantage

1.1. **The Standard Model's Successes and Failures**

The standard model of comparative advantage successfully explains broad trade patterns, such as why labour-abundant countries export labour-intensive goods. However, it fails to account for persistent wage disparities, increasing returns to scale, intra-industry trade between similar economies, and the uneven distribution of trade gains. These shortcomings reveal that comparative advantage, while useful, provides an incomplete picture of how trade actually functions.

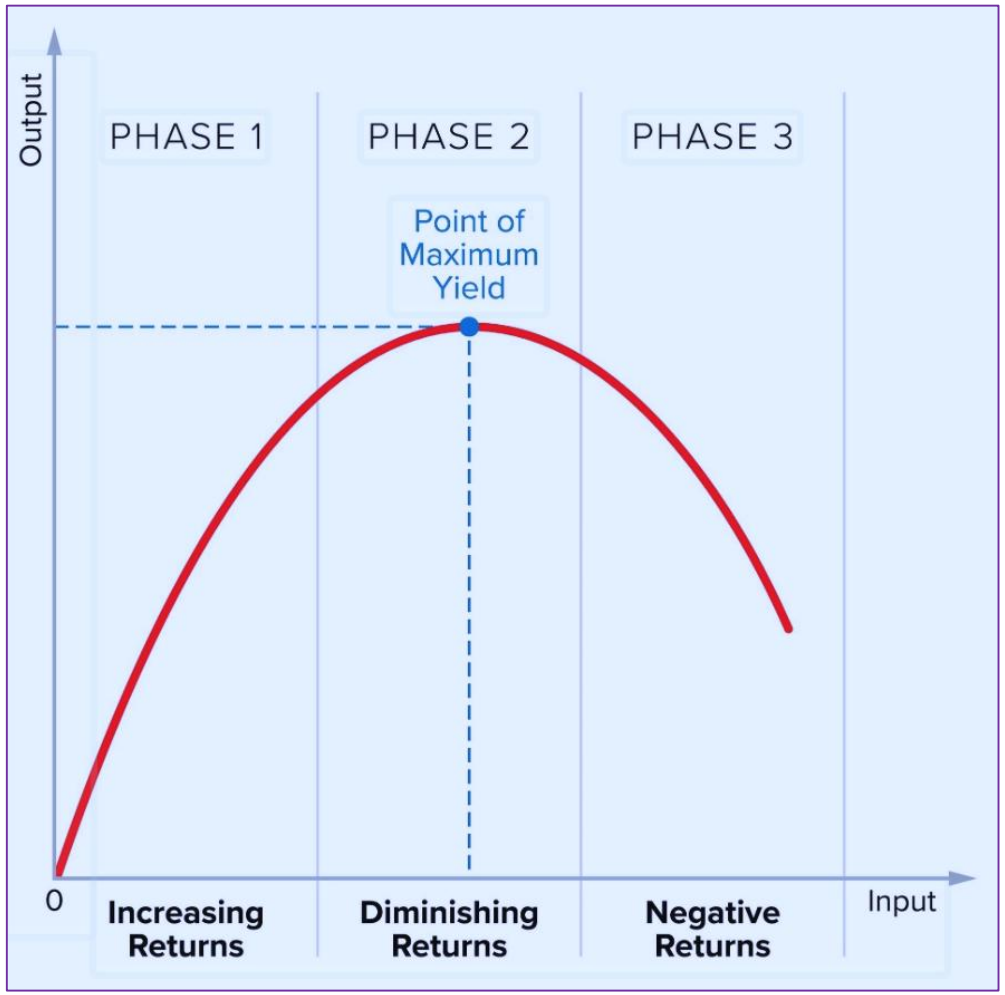
SECTION 2: The Specific-Factors Model

2.1 Assumptions and Motivation

The specific-factors model (also known as the Ricardo-Viner model) relaxes the H-O assumption that factors are perfectly mobile between sectors. In the short run, some factors are **specific** to an industry.

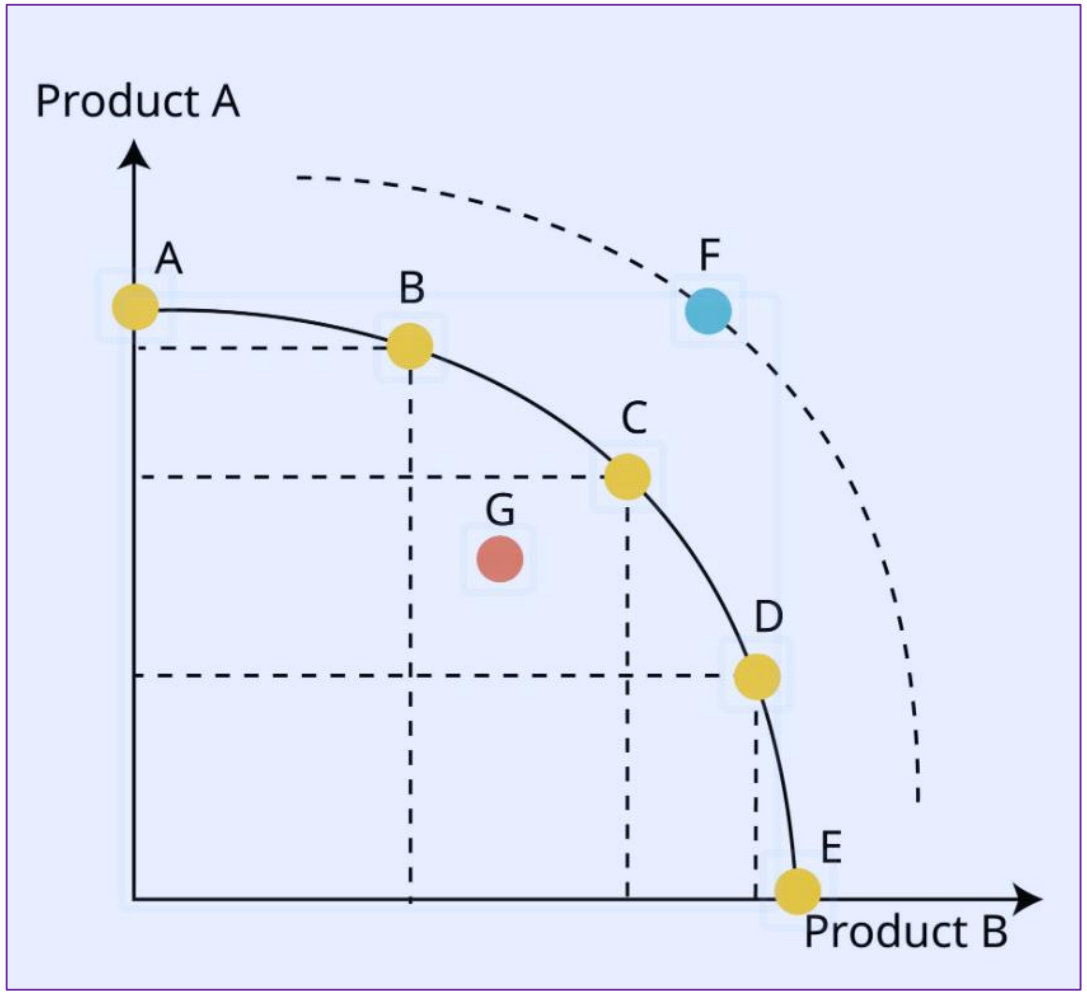
In this two-good economy (Manufacturing and Agriculture), labor is a mobile factor that can freely move between sectors, leading to a single equilibrium wage ($w*$) across the entire economy. In contrast, capital is specific to Manufacturing and land to Agriculture, meaning these "trapped" resources cannot be used in the other sector.

Figure 1. The Production Function and Diminishing Returns



Source: Created by the author.

Figure 2. The Concave PPF



Source: Created by the author.

Why This Matters for Trade

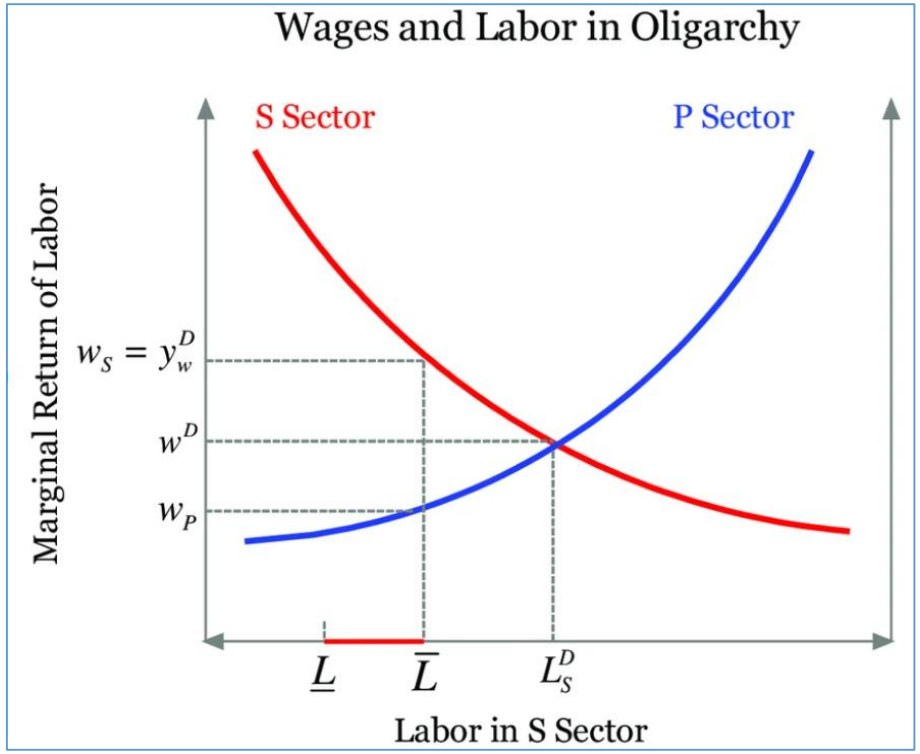
a. **The Export Sector:** If the price of Manufacturing rises (due to exports), the specific factor in that sector (Capital owners) wins significantly.

b. **The Import Sector:** The specific factor in the competing sector (Land owners) loses significantly because their resource is stuck in a shrinking industry.

c. **Labor:** The effect on workers is ambiguous, as it depends on whether they spend more of their income on the good that became cheaper or the one that became more expensive.

Labor Allocation and Wages

Labor is mobile between sectors, so workers move to whichever pays a higher wage until wages equalize across Manufacturing and Agriculture at a single equilibrium . Each sector hires labor until the value of the marginal product of labor equals.



Source: Wang, Y. (2014). *Essays in political economy and development* [Doctoral dissertation, University of Zurich]. https://doi.org/10.5167/uzh-109327

Figure 3. Labor Allocation and Wage Determination in Equilibrium

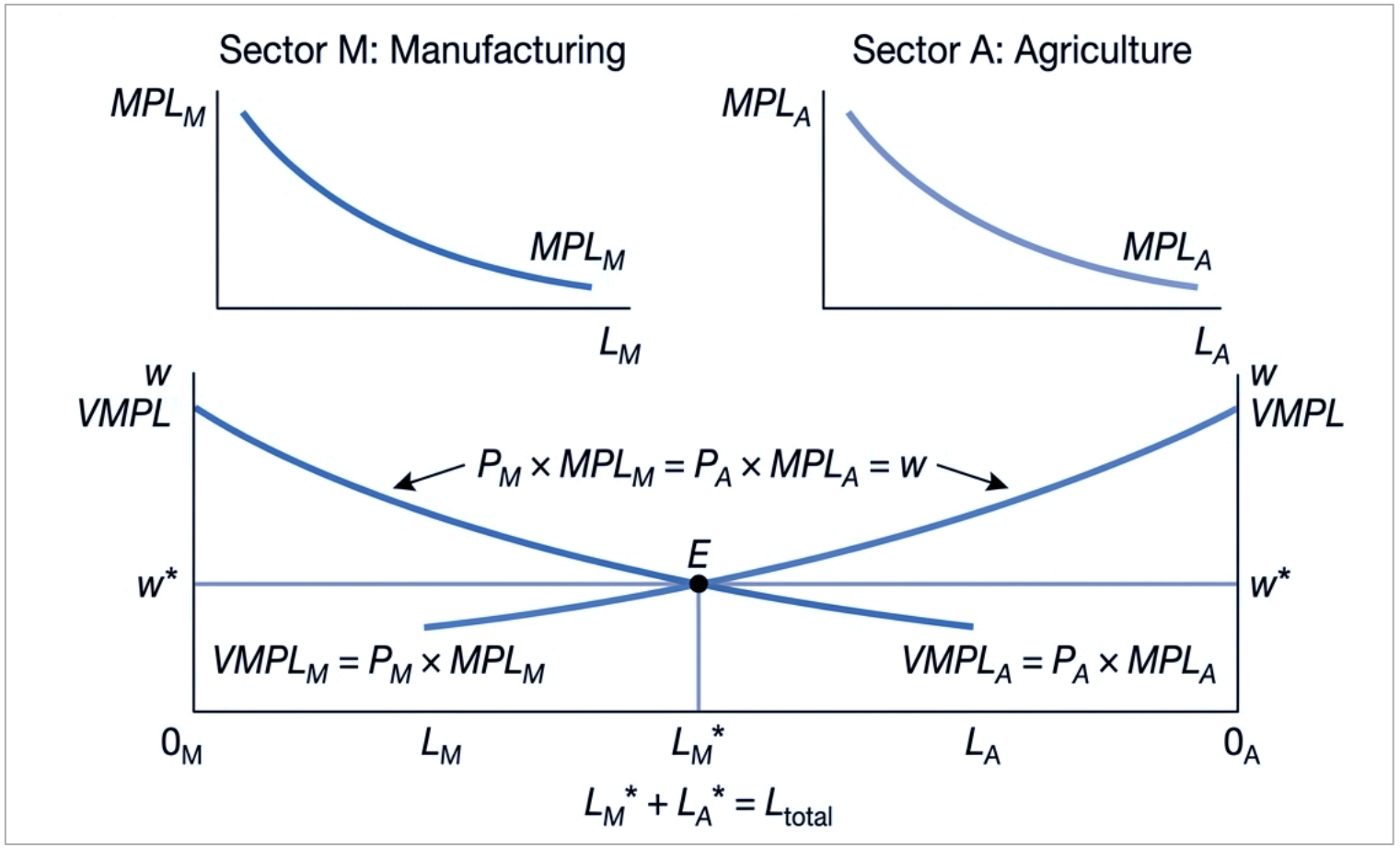


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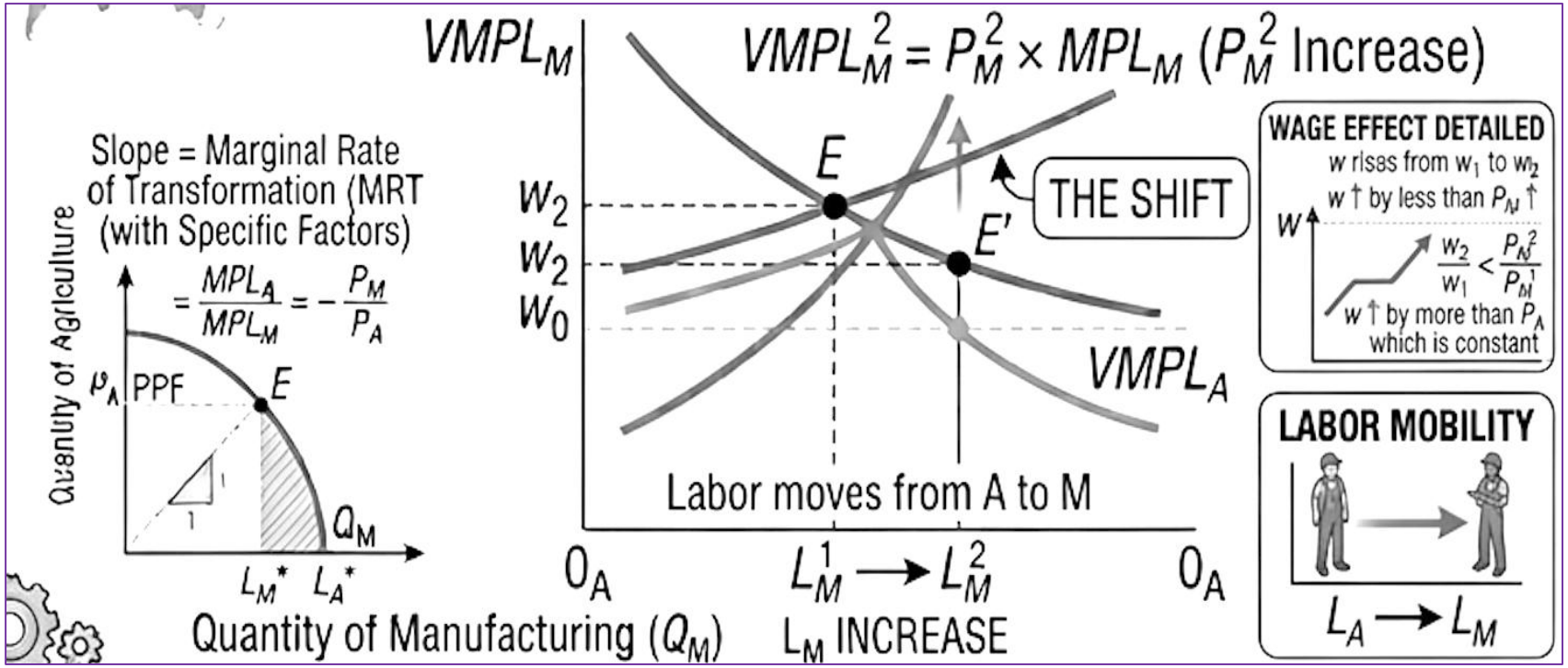
Figure 4. Effect of Trade (price change): Labor relocation and wage determination



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Comparison with H-O

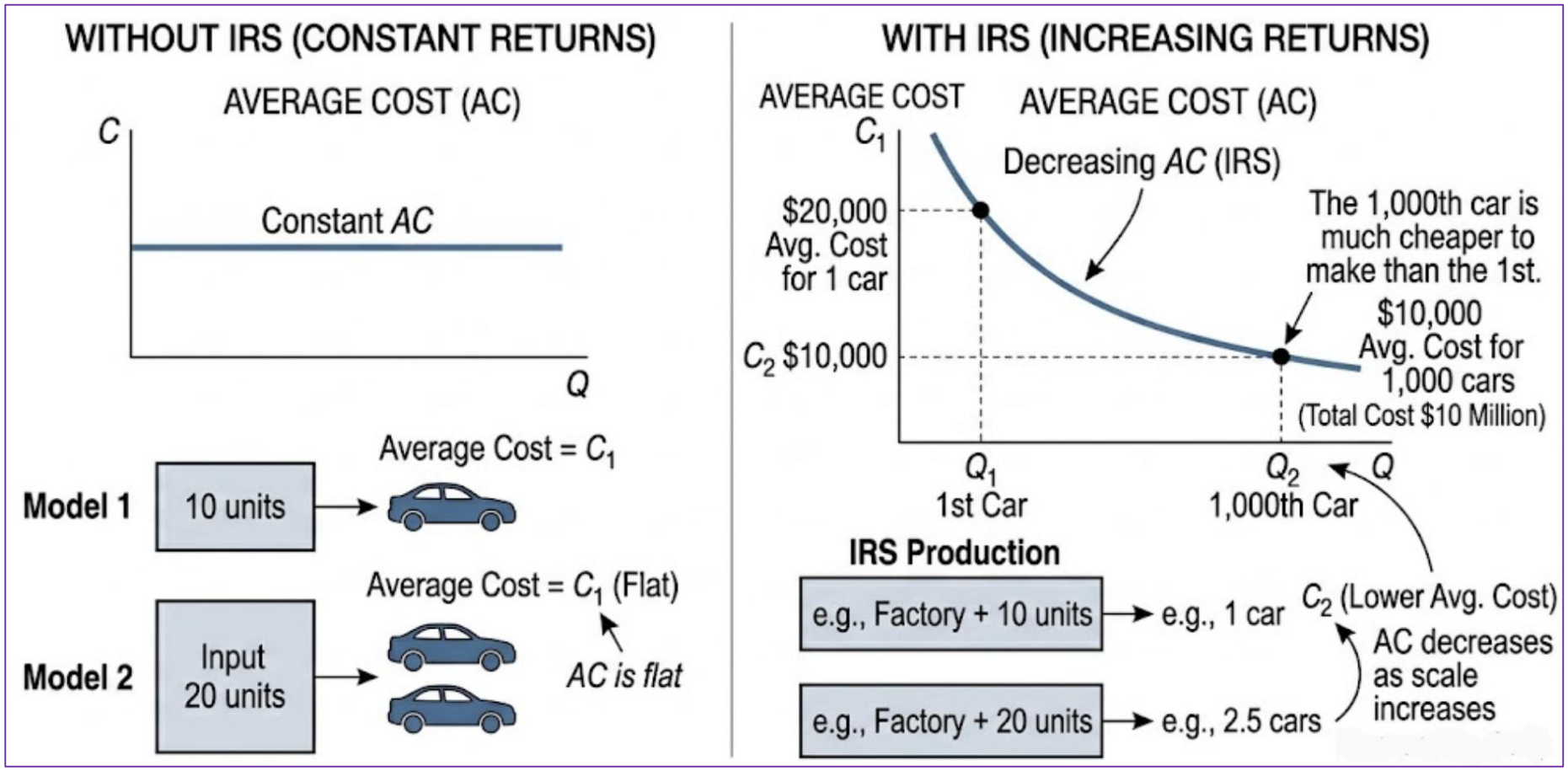
Table 1: Comparison of the Heckscher-Ohlin and Specific-Factors Models of International Trade

Feature	H-O Model	Specific-Factors Model
Time horizon	Long run (full adjustment)	Short/medium run (partial adjustment)
Factor mobility	Perfect across sectors	Some factors immobile (specific), others mobile
Trade effects on factor prices	Factor prices equalize across countries	Factor prices diverge across countries
Winners/losers	By factor ownership (abundant vs. scarce)	By industry affiliation (export vs. import-competing)

SECTION 3: Increasing Returns to Scale (IRS)
Why IRS Matters for Trade

In the context of international trade, Increasing Returns to Scale (**IRS**) explains why countries trade even when they have similar resources or technology. Unlike traditional theories that focus on natural advantages, IRS suggests that a country can create an advantage simply by specializing in a specific industry and producing at a massive volume.

Figure 5. Economic of Scale and Average Cost (AC)



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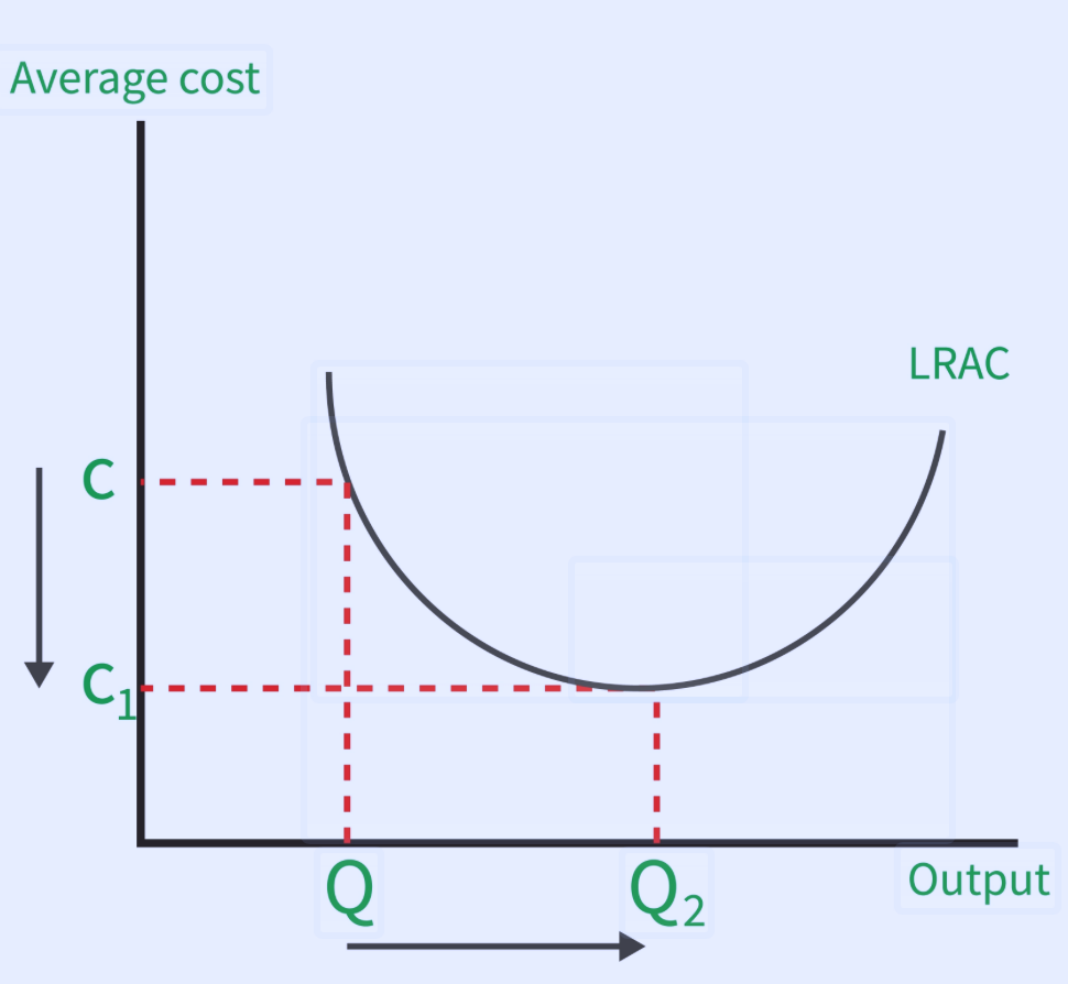
Types of Economies of Scale

a. Internal Economies of Scale

Internal economies of scale occur when a **single firm's own increase in output** leads to a decrease in its average cost (cost per unit). Unlike external factors, this cost advantage is **firm-specific** and not automatically shared with competitors.

Figure 7. IRS and AC



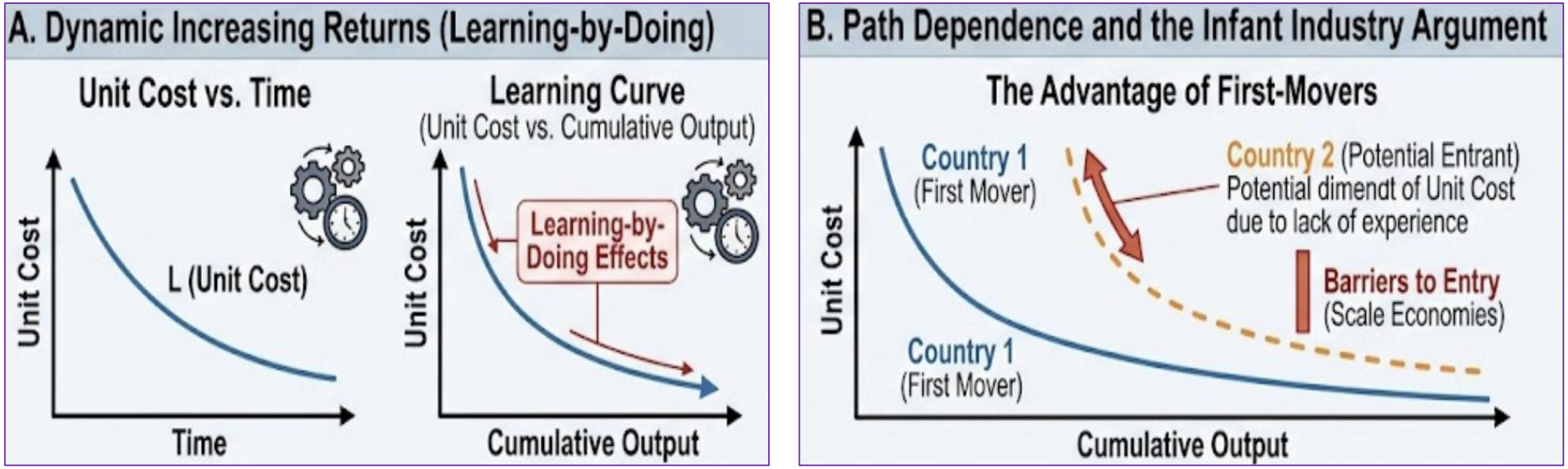
Source: Created by the author.

Market Structure Consequences

Internal economies of scale naturally lead to imperfect competition because they create significant barriers to entry. A new, small firm cannot compete on price because it lacks the volume to achieve the incumbent's low average costs.

Market Type	Condition	Examples
Monopoly	Scale economies are so vast that one firm can serve the entire market more efficiently than two or more.	Water utilities, electricity grids.
Oligopoly	A few large firms achieve scale and dominate the industry.	Aircraft (Boeing vs. Airbus), CPUs (Intel vs. AMD).

Figure 8. External Economies of Scale and Trade Path Dependence



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External vs. Internal Economies of Scale: A Side-by-Side

Feature	Internal Economies of Scale	External Economies of Scale
Source of cost reduction	Firm's own output level	Industry's total output level
Control	Within the firm's direct control	Outside the firm (a public good / cluster effect)
Barriers to entry	High – new small firms have higher costs	Low – new small firms share the benefits
Typical market structure	Imperfect competition (monopoly, oligopoly)	Perfect competition (many small firms)
Examples	Auto plant, aircraft manufacturer, R&D-heavy pharma	Silicon Valley, Hollywood, financial district in NYC
Does a small firm benefit?	No – it cannot spread fixed costs enough	Yes – it benefits from the industry's scale

Limitations & When External Economies Can Fail

1. Congestion Diseconomies (The "Too Much Success" Problem

As an industry cluster grows beyond a certain point, the very factors that created low costs begin to reverse. The influx of firms and workers drives up prices for fixed local resources (especially land and housing) and degrades the local quality of life.

2. Knowledge Spillovers Can Be Hard to Appropriate (The Innovation Market Failure)

When knowledge flows too freely between firms, the firm that *paid for* research and development (R&D) may not capture enough of the financial benefit. This discourages investment in innovation, leading to less overall progress than is socially optimal.

Summary Table of Limitations

Limitation	Core Problem	Example	Consequence
Congestion diseconomies	Growth beyond optimal density raises costs (housing, traffic, pollution)	San Francisco Bay Area high housing costs	Offsets external economy benefits; firms may leave
Hard to appropriate knowledge	R&D investors cannot capture full returns; free-riding reduces innovation	Semiconductor firms copying each other's chips	Underinvestment in R&D (market failure)
Not all industries benefit	External economies only matter for knowledge-intensive or complex-input industries	Wheat farming vs. Hollywood films	Policy misdirection if applied universally

Why It Matters: Key Implications

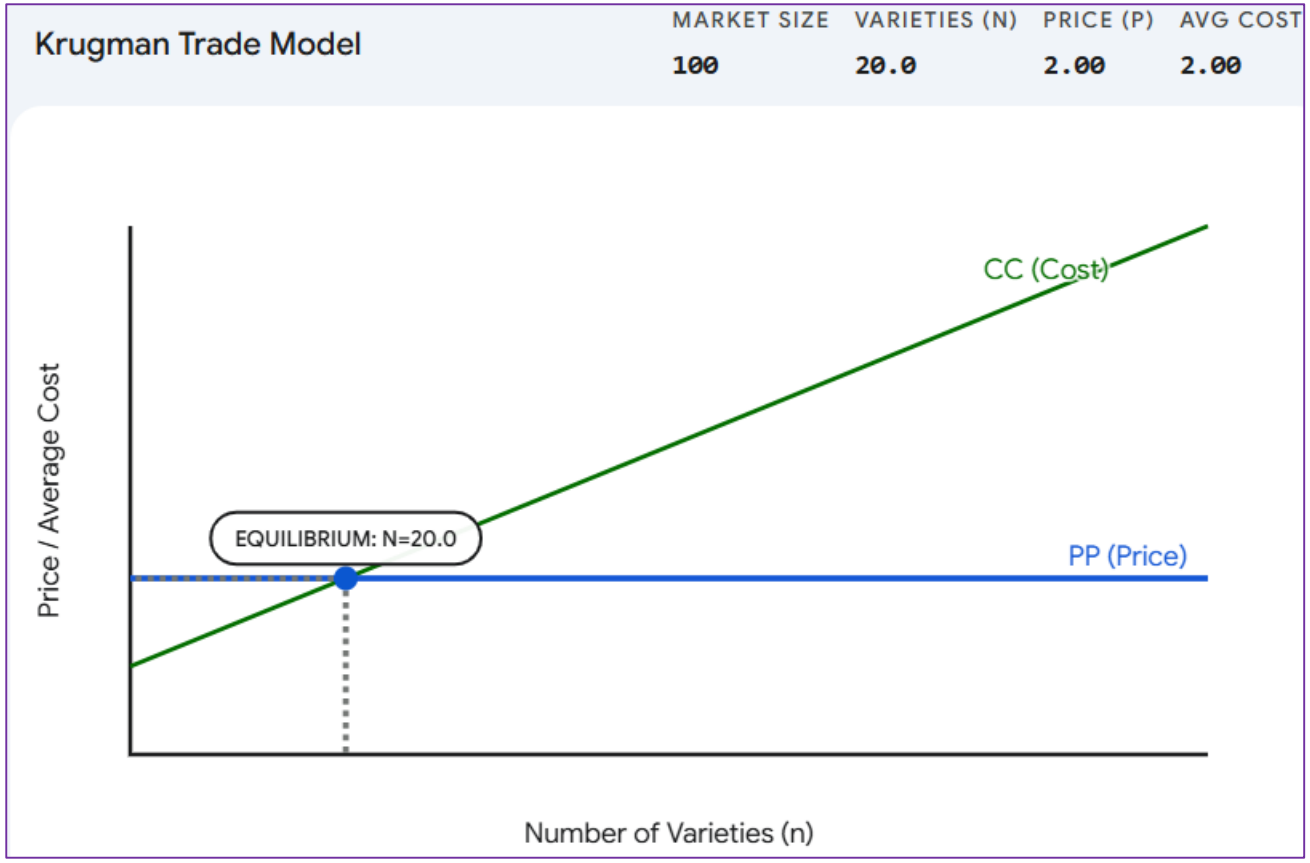
This explains why **Germany and France** trade cars, but **Germany and Nigeria** trade cars for oil.

Feature	**Inter-Industry Trade (Old)**	**Intra-Industry Trade (New)**
Basis	Comparative advantage (differences)	Economies of scale, product differentiation (similarities)
Between	Different countries (North-South)	Similar countries (North-North)
Adjustment costs	High (workers must switch industries)	Low (workers switch within same industry)
Gains from trade	Cheaper imports, efficiency	More variety, lower prices due to scale
Trade pattern	Predictable by factor endowments	Less predictable (historical accident matters)

The Dixit-Stiglitz-Krugman Model (1977, 1979)

The **Dixit-Stiglitz-Krugman Model** is a groundbreaking theory that explains why countries trade even when they have similar resources (like Germany and France trading cars). Before this model, economists couldn't explain why similar countries traded similar goods; Krugman won the Nobel Prize for showing that **Variety** and **Efficiency** are the drivers.

Figure 7. Krugman Trade Model



Source: Created by the author.

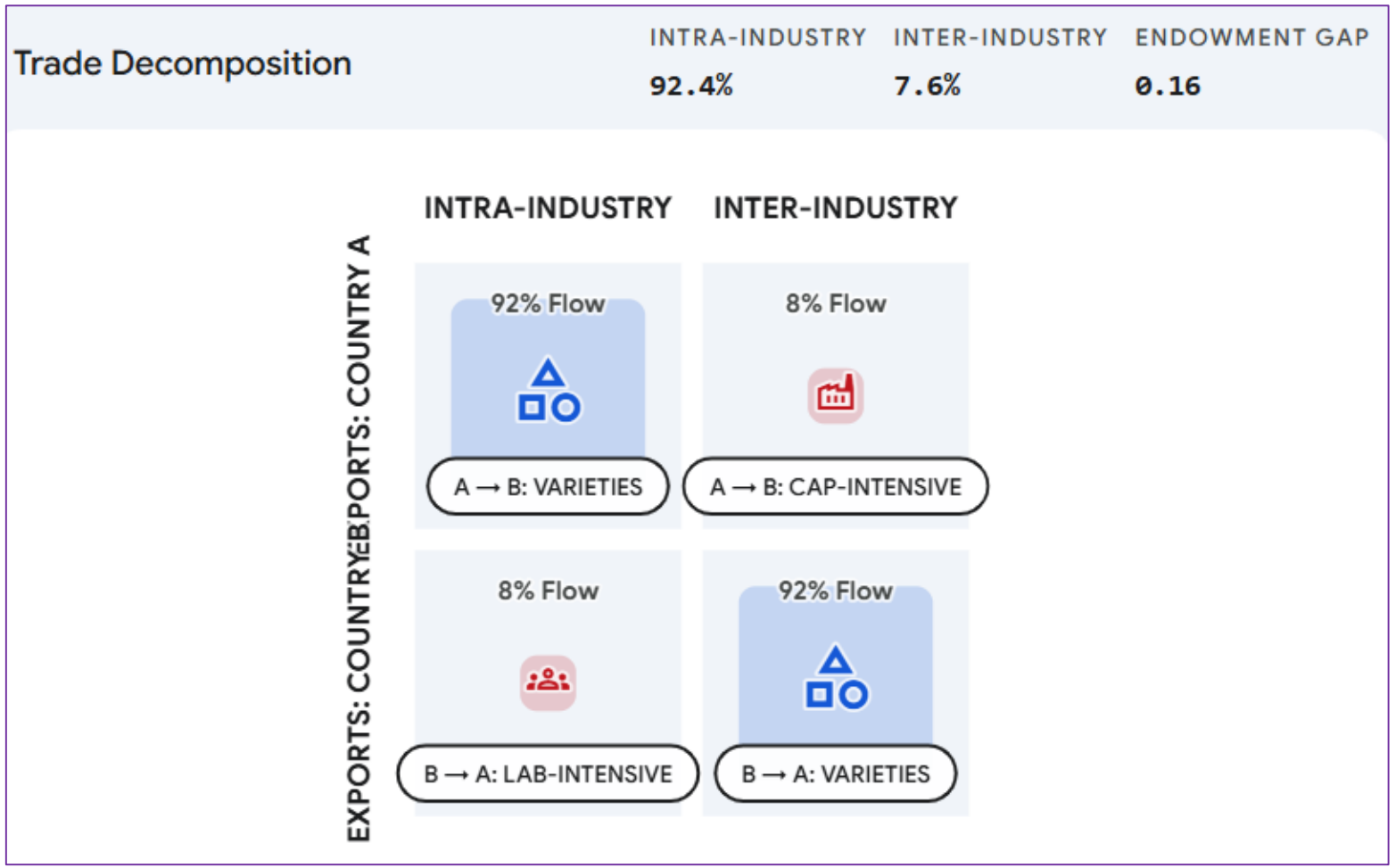
Helpman-Krugman Extensions

Helpman & Krugman (1985) showed that with differences in factor endowments, both inter- and intra-industry trade coexist:

Inter-industry trade: Capital-abundant country exports capital-intensive goods.

Intra-industry trade: Within each sector, countries exchange differentiated varieties.

Figure 8. Trade Decomposition



Source: Created by the author.

SECTION 5: The Gravity Model of Trade

$$X_{ij} = \frac{Y_i Y_j}{Y_W} \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma}$$

While the "traditional" gravity model simply looked at GDP and distance, this derivation by **Anderson and van Wincoop** solved the "Gold Medal Error" in trade economics by accounting for **Multilateral Resistance**.

SECTION 6: Synthesis – Putting It All Together

When to Use Which Model?

Research Question	Best Model
Who gains/loses from a tariff in the short run?	Specific-factors
Why do similar countries trade so much?	Monopolistic competition / IIT
Why do large economies trade more with each other?	Gravity + IRS
How does a new free trade agreement affect volumes?	Gravity model
Why do industries cluster in one location?	External economies of scale

Review Questions

Short answer: In the specific-factors model, why do landowners lose from a rise in manufactured goods prices? Be specific about real returns.

Numerical: Two countries (Home, Foreign) have identical demand and cost conditions: F=100,c=10,σ=3F=100,c=10,σ=3. Market size in autarky = 1000. Calculate autarky price and number of firms. Then with trade (market size 2000), recalculate. Show gains from trade.

Graphical: Draw a diagram showing how labor allocation changes when the price of the import-competing good falls in the specific-factors model. Identify winners and losers.

Data interpretation: The Grubel-Lloyd index for US-Japan auto trade is 0.7. Explain what this means and why it is higher than US-Mexico auto trade (0.2).

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Gravity Model

Thank you!