Growth and Trade

луш Impact of growth on trade

» Does growth favor one industry or one factor?
» Does growth always benefit national income?
» Recent extension, dynamic case: Impact of trade on growth

луш Types of growth

» Factor growth: Increases in the labor stock, or capital stock
» Balanced growth (both factors) vs. biased growth (only one)

луш Technology change (“progress”) as a type of growth

» Technology change that saves on labor and/or capital
» Technology change in one or both industries
» Why lump topics together? Technology change “as if” country had more factors of production
Growth and Trade - Goals of Analysis

✧ Production effects

✧ Effects on pattern of trade

✧ Effects on dependence on other countries

✧ Effects on terms of trade (TOT)

✧ Effects on national welfare
Types of Growth and Technology Change

- **Labor growth**
  - Usually considered exogenous, except
  - Labor force participation rates (responding to incentives)
  - Migration (responding to economic / political forces)

- **Capital accumulation**
  - Mostly endogenous, domestic residents save and invest when payoffs are high
  - Also capital inflows from foreigners (later chapters)
  - Or annexation of land (West/East Germany, China/HK)

- **Technological Progress**
  - Endogenous - Invest in R&D to earn a high rate of return
  - Exogenous - Random discoveries increase productivity
Balanced Growth vs. Biased Growth

- Balanced growth ⇔ growth in both K & L that leaves country’s K/L unchanged
- Balanced growth moves the production possibilities curve outward in equal proportions
- OP₁P₂ is a ray from origin
- For a small country, TOT does not change
- Production of both goods ↑ from P₁ to P₂
- Consumption ↑
- Welfare improves
Balanced Growth vs. Biased Growth

- Biased growth ⇔ growth in K or L that changes the country’s K/L ratio
- Biased growth moves the production possibilities curve outward, but not symmetrically
- For a small country, TOT does not change
- Production of one (or both goods) ↑ from P₁ to P₃
- Consumption ↑
- Welfare improves

Notice in this case that the “trade triangle” shrinks after growth; there is less ‘willingness’ to trade.
Biased Growth vs. Biased Growth

- Biased growth $\Leftrightarrow$ growth in K or L that changes the country’s K/L ratio
- Biased growth moves the production possibilities curve outward, but not symmetrically
- For a small country, TOT does not change
- Production of one (or both goods) ↑ from $P_1$ to $P_4$
- Consumption ↑
- Welfare improves
Special Case: Growth in One Factor Only

- Assume growth in a single factor (Labor), and the cloth is the L-intensive good.
- At constant TOT,
  - Production of L-intensive good (Cloth) ↑
  - Production of K-intensive good (Wheat) ↓
- The above case: The Rybcznski Theorem
- If cloth were the export good, the country’s dependence on trade ↑
Growth in Large vs. Small Countries

 Definitions: Small and Large

- Small country: One whose actions do not effect prices in other countries or the world - A “price-taker”
- Large country: One whose actions can effect prices in other countries or the world - A “price-maker”

Definition: Better/worse TOT

- TOT ≡ \( \frac{P_{Export}}{P_{Import}} \)
- Improvement ⇒ TOT ↑
- Worsening ⇒ TOT ↓

At left, TOT improves, generating extra welfare gain

Lindert & Pugel, Figure 5.3
Could growth make a country worse off?

- Yes, if it pushes the TOT against itself so much that the value of its exports fall

**Necessary conditions**
- Growth biased toward exports
- Increase in supply depresses price of exports
- Foreign demand is inelastic
- Country heavily dependent on trade

**Possible examples:**
- Zambia copper producers
- Honduras banana producers

**Immiserizing Growth in Large Countries**

![Graph](Lindert & Pugel, Figure 5.4)
Technology and Trade

- H-O theory puts primary emphasis on factor endowments, assuming that production technologies are similar.
- Differences in production technologies can also create comparative advantage.
- Technological differences could be consistent with H-O theory when countries with skilled labor conduct R&D to improve technology.
- **Dynamic** interpretation of H-O theory:
  - High skilled labor countries conduct R&D, gain technology edge.
  - Technology diffuses across countries over time.
  - **Product Cycle Hypothesis** for individual goods.
  - Technology “gap” followed by convergence among developed countries.
Technology and Trade - The Product Cycle

- **New product**: Introduced in country with highly skilled labor and R&D (U.S.). Product is expensive, price inelastic, produced in US and sold there and to other high income countries. (T1) U.S. is net exporter.
- **Maturing product**: Market expands in Europe, etc. + ROW (T2)
- **Standardized product**: Technology diffuses mass production, costs drop, price elasticity ↑
- **Production moves to Europe, etc + ROW**
- **US net importer (T4), ROW net exporter (T5)**
Summary - Growth & Trade

✧ Growth characterized as “Balanced” or “Biased”
  » Balanced growth leaves K/L unchanged
  » Biased growth effects K/L
  » Growth in the abundant factor can increase trade dependence
  » Growth in the scarce factor can decrease trade dependence

✧ Growth effects vary in “small” versus “large” countries
  » Under special situations, immiserizing growth is possible (policy responses?)

✧ Analysis of technology change similar to growth
  » Technology change effect shape of transformation curve
  » Technology differences can be a basis for trade. (Dynamics)