Major Themes in International Economics
+ Review of Microeconomic Concepts

- Major themes in International Economics
- Review of microeconomic concepts
  » Demand, Supply
  » Demand + Supply = Equilibrium
  » Utility Functions
  » Consumption and Income
  » Consumption and Prices
  » Production, Consumption
  » Production + Consumption = Equilibrium
- Trade based on consumption / production differences
- Partial equilibrium analysis of trade

Demand

- Downward Slope
  » Individual’s marginal utility
  » Ranking of all people
- Assumes income, other prices, tastes constant
- Shifts vs. movements along curve
- Price Elasticity
  \[ \varepsilon_D = -\frac{\Delta Q_D}{\Delta P} \]
- Consumer surplus (JGP’)
  » Max. consumers would pay - actual amount paid
- Stock & flow demand curves
Supply

- Upward Slope
  - Individual’s marginal cost
  - Ranking of all suppliers
- Assumes technology, factor costs, endowments constant
- Short-run vs. long-run supply curves
- Price Elasticity
  \[ \varepsilon_S = -\frac{\%\Delta Q_S}{\%\Delta P} \]
- Producer surplus (GKP’)
  - Revenues actually received - marginal production cost

Demand + Supply

- Equilibrium: Q demanded = Q supplied at \( P^* \) and \( Q^* \)
- Net increase in welfare due to this market is consumer surplus + producer surplus
- “Shortage” at \( P_A \):
  \( Q(S) < Q(D) \)
- “Surplus” at \( P_B \):
  \( Q(S) > Q(D) \)
- Comparative statics: Shift in demand from \( D \) to \( D_1 \)
- Dynamics: How does the market adjust over time from \( (Q^*, P^*) \) to \( (Q_B, P_B) \)?
Utility

- Constant utility along curve
- Ordering: \( U_3 > U_2 > U_1 \)
- Shape: Convex to the origin, need increasing amounts of one good to offset losses in other good
- Slope: \( P_A > P_B > P_C \), where \( P = \text{Price food} / \text{Price cloth} \)
- Curves are non-overlapping
- Social utility comparisons
  - Require interpersonal comparisons
  - Compensation principle: gainers compensate losers

Consumption and Income

- Objective: Maximize utility from consumption s.t. budget constraint
- Budget constraint: \( X_3 > X_2 > X_1 \); rising income
- Income elasticity: \( \eta = \%\Delta Q / \%\Delta \text{Income} \)
  - Inferior goods: \( \text{Inc} \uparrow, Q \downarrow \)
  - Normal goods: \( \eta > 0 \)
  - Superior goods: \( \eta > 1 \)
- Engel curve: Income expansion path
- Trade effects income and therefore consumption
Consumption and Prices

- Relative price change
  » from YX to YX', food price ↓
- Price elasticity
  » Price expansion path: C₀→C₁; Q₀→Q₁
- Income effect:
  From Q₀→Q₁ (+ or -)
- Substitution effect
  From Q₀→Q₀'
  » Almost always +, (except for Giffen goods)
- International trade effects
  prices, and therefore consumption patterns

Production (1 of 2)

- Transformation or production possibilities curve (PPC)
  » Full utilization of resources given technology and endowments
- Shapes:
  » Constant costs
  » Increasing costs
  » Decreasing costs (not shown)
- Slope: - dY/dX = price of food in terms of clothing
  » P(food) higher at P₁
  » P(clothing) higher at P₂
Production (2 of 2)

- Slope: \(- \frac{dY}{dX} = \) price of food in terms of clothing
  - = opportunity cost (what you give up of one good to get one unit of another good)
  - = Marginal Rate of Transformation (MRT)

- Factor growth
  - Outward shift of PPC
  - Neutral and biased growth

- Technological change
  - Outward shift of PPC
  - Neutral and biased change

Production and Consumption (1 of 2)

- No trade (autarky) situation
  - Production must equal consumption \((P_1 = C_1)\)
  - This determines the local price of food in terms of clothing \(\text{TOT}_1 = \) terms of trade) and utility \((U_1)\)

- Trading equilibrium
  - World prices differ from local prices (assume \(\text{TOT}_1 < \text{TOT}_2 \Rightarrow \) price of clothing ↑)
  - Country produces more clothing, less food, and trades clothing for food
Production and Consumption (2 of 2)

- **Trade triangle:**
  - Exports of cloth = $P_2 - C_2$
  - Imports of food = $C_2 - P_2$
- Trade allows country to reach higher level of utility $U_2 > U_1$
- **Pareto Optimality**
  - $\text{MRT (in production)} = \text{MRS (in consumption)} = \text{TOT (relative prices)}$
  - No marginal changes in production or consumption can further improve welfare

**Two Sources of Pre-Trade Price Differentials**

(1) **Production differences, tastes identical**

- Production possibilities in countries A and B differ ($T_A \neq T_B$)
- Assume A & B have identical tastes, for both utility is $U_1$
- Pre-trade ($P=C$):
  - Country A at $P_A$
  - Country B at $P_B$
- After trade, A & B face common world prices (TOT)
  - Production diverges
  - Consumption converges
- After trade, utility $\uparrow$ to $U_2$
Two Sources of Pre-Trade Price Differentials

(2) Production identical, tastes different

- Production possibilities in countries A and B identical
  \( T_A = T_B = T \)
- Assume tastes in A & B differ \( (U_A \neq U_B) \)
- Pre-trade \( (P=C) \):
  - Country A at \( P_A \)
  - Country B at \( P_B \)
- After trade, A & B face common world prices \( (TOT) \)
  - Production converges
  - Consumption diverges
- After trade, utility \( \uparrow, U_A^*, U_B^* \)

The Basic Theory of International Trade

Four essential questions about international trade

- Why do countries trade? What factors determine what a country exports and imports?
- How does trade effect production and consumption in each country?
- How does trade effect welfare in each country? In what sense is it correct to say that a country gains or loses through trade?
- How does trade effect the distribution of income or well-being across groups? Can we identify groups that gain or lose because of trade?
Partial Equilibrium Analysis: The Effects of Trade on Production, Consumption and Prices of Cloth

- Pre-trade, price of cloth is high in U.S. (2.0) and low in ROW (2/3)
- International trade establishes a single world price
- In U.S. cloth demand ↑, production ↓; in ROW cloth demand ↓, production ↑

Partial Equilibrium Analysis: Welfare Effects on Producers, Consumers, and the Nation as Whole from Trade in Cloth (U.S. View)

Gains from international trade in wheat and cloth

<table>
<thead>
<tr>
<th>Group</th>
<th>No international trade</th>
<th>With international trade</th>
<th>Net gain from trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. cloth consumers</td>
<td>c</td>
<td>a + b + c + d</td>
<td>a + b + d</td>
</tr>
<tr>
<td>U.S. cloth producers</td>
<td>a + e</td>
<td>e</td>
<td>- a</td>
</tr>
<tr>
<td>U.S. as a whole</td>
<td>c + a + e</td>
<td>a + b + c + d + e</td>
<td>b + d</td>
</tr>
</tbody>
</table>

Prof. Levich C45.0001, Economics of IB Chap. 1-2, p. 15
Partial Equilibrium Analysis: Welfare Effects on Producers, Consumers, and the Nation as Whole from Trade in Cloth (ROW view)

International Trade in Cloth

\[ D = \text{U.S. demand for cloth imports} \]

\[ S = \text{ROW supply of cloth exports} \]

\[ P = \text{bu/yd} \]

\[ E = \text{World Price} \]

The ROW’s Cloth Market

<table>
<thead>
<tr>
<th>Group</th>
<th>Net gain from trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROW cloth consumers</td>
<td>- (j + k) [a loss]</td>
</tr>
<tr>
<td>ROW cloth producers</td>
<td>j + k + n</td>
</tr>
<tr>
<td>ROW as a whole</td>
<td>n</td>
</tr>
</tbody>
</table>

Gains from international trade in wheat and cloth

**Partial Equilibrium Analysis: Welfare Effects of Trade in Cloth & Wheat**

<table>
<thead>
<tr>
<th></th>
<th>Cloth</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>Consumers +</td>
<td>Consumers -</td>
</tr>
<tr>
<td></td>
<td>Producers -</td>
<td>Producers +</td>
</tr>
<tr>
<td>R.O.W.</td>
<td>Consumers -</td>
<td>Consumers +</td>
</tr>
<tr>
<td></td>
<td>Producers +</td>
<td>Producers -</td>
</tr>
</tbody>
</table>

- U.S. - Cloth consumers better offers, producers worse off
- R.O.W. - Cloth consumers worse off, producers better off
- Welfare effects are the opposite in the wheat industry
- All can benefit from trade, when gainers compensate losers
The Four Trade Questions: Early Answers

✧ Why do countries trade?
  » Before trade, differences in demand and supply conditions lead to prices differences across countries

✧ How does trade effect production and consumption?
  » Opening up trade results in a single world price
  » Production expands in the exporting country
  » Consumption expands in the importing country

✧ Which countries gain from trade?
  » Both countries gain, in proportion to the price change from no trade to free trade (See next slide)

✧ Within a country, who gains, who loses from trade?
  » Gainers: Export producers & Import consumers
  » Losers: Import producers & export consumers

Computing the net gains from trade

✧ The formula for triangle \( d \) on slides 16 & 17 is:
  » \( d = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} (D_1 - D_0)(P_0 - P_1) \)
  » Recall that price elasticity of demand is:
    \[
    \varepsilon_D = -\frac{-\frac{\Delta Q_D}{Q_D}}{-\frac{\Delta P}{P_0}} = \frac{D_1 - D_0}{P_0} \cdot \frac{P_0}{D_0}
    \]
    so, \( D_1 \cdot D_0 = \varepsilon_D (P_0 - P_1) \cdot D_0/P_0 \)
  » Let \( \tau = \% \text{ price change} = \frac{P_1 - P_0}{P_0} \)
    so, \( P_0 - P_1 = -\tau P_0 \)
  » By substitution, \( d = \frac{1}{2} \varepsilon_D \tau^2 D_0 P_0 \)

✧ The formula for triangle \( b \):
  \( b = \frac{1}{2} \varepsilon_S \tau^2 D_0 P_0 \)
  where \( \varepsilon_S \) is price elasticity of supply

✧ The formula for triangle \( b + d \):
  \( b + d = \frac{1}{2} \varepsilon_M \tau^2 M P_0 \)
  where \( \varepsilon_M \) is price elasticity of demand for imports, \( M = \text{imports} \)