The Theory of International Trade

- Classical theory
  - Absolute advantage: Adam Smith (1776)
  - Comparative advantage: David Ricardo (1817)

- Neo-Classical theory
  - Increasing marginal costs of production
  - Factor proportions theory: Heckscher-Ohlin (1919, 1933)

- General equilibrium analysis
  - Simultaneous equilibrium in both export and import goods

- Still interested in the basic four questions
  - Why do countries trade?
  - Which countries gain from trade?
  - Within countries, who are gainers & losers from trade?
  - Impact of trade on production and consumption?
Mercantilism or Free Trade?

Adam Smith, *The Wealth of Nations* (1776)

» “... the maxim of every prudent master of a family, never to attempt to make at home what it will cost more to make ... than to buy. The tailor does not attempt to make his own shoes, but buys them from the shoemaker. What is prudence in the conduct of every private family can scarce be folly in that of a great kingdom.”

» Smith writing in response to “mercantilism,”
  - Philosophy that a nation’s wealth or well-being depended on its store of gold and silver, implying that exports are “good” and imports are “bad”
  - Viewed trade as a “zero-sum” game rather than a positive-sum game
## Absolute Advantage

<table>
<thead>
<tr>
<th>Hours Labor per Unit Output</th>
<th>U.S.</th>
<th>East Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 bushel wheat</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>1 yard cloth</td>
<td>4.0</td>
<td>1.0</td>
</tr>
</tbody>
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- U.S. has absolute advantage in wheat: \((P_w/P_c) = 0.5\)
- East Asia has absolute advantage in cloth: \((P_w/P_c) = 2.5\)

- Easy to show arbitrage trading opportunities in this case
- Which way would it go?
Comparative Advantage - Assumptions

- 2 countries, 2 goods
- 1 factor input used in production in each industry. This factor input (labor) assumed homogeneous in quality, fixed in supply, and always fully employed
- Factor is freely mobile between industries, completely immobile between countries
- Perfect competition in all markets in both countries
- Factor input has constant productivity (constant costs) in each industry
- No transport costs, tariffs, quotas, etc.
Comparative Advantage - An Example

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» Now East Asia has absolute advantage in both products
» Is there still an incentive to trade?
» U.S. has comparative advantage in wheat. In U.S. \( \frac{P_w}{P_c} = 0.5 \), wheat is cheap in the U.S.
» East Asia has comparative advantage in cloth. In East Asia \( \frac{P_w}{P_c} = 1.50 \), cloth is cheap in East Asia
» The are also arbitrage trading opportunities in this case
» What happens when people start to arbitrage?
Before trade, each country produces (and consumes) at \( P_0 \)

After trade, each country specializes production in its comparative advantage good, and then trades for the other good

Trade balances: US exports 20 wheat for 20 cloth; East Asia exports 20 wheat for 20 cloth
Comparative Advantage - Results

- Source of pre-trade price differences and a country’s comparative advantage
  - Arise from international differences in relative factor productivity
  - Country exports good that it produces relatively efficiently

- Tendency of complete specialization in production
  - Incomplete specialization related to size differences

- Trade generates welfare gains by allowing changes in production and consumption patterns
  - Both a shift in production and a rise in the value of production
  - Both countries gain from trade, not a zero-sum game
Comparative Advantage - Limitations

- Emphasis is on labor as the sole factor of production
- Emphasis is on supply conditions and excludes demand patterns

- Does not examine
  » Why countries have different costs
  » Why countries have different technologies
  » Why countries do not trade in technologies
  » Numerous other issues
Factor Proportions Model - Assumptions

- 2 countries, 2 goods
- 2 factor inputs (K, L): homogeneous quality, fixed supply (static, no growth), always fully employed
- Both factors freely mobile between industries, completely immobile between countries
- Perfect competition in all markets in both countries
  - Producers maximize profits
- Production technology the same in both countries
  - One good always requires more intensive use of one input
    - $\Rightarrow$ K-intensive good and L-intensive good
- Consumers tastes are given, they maximize utility
- No transport costs, tariffs, quotas, etc.
### Factor Proportions Model - An Example

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<tr>
<th>Pre-trade</th>
<th>U.S.</th>
<th>East Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of cloth (bushels/yard)</td>
<td>2.0</td>
<td>0.67</td>
</tr>
<tr>
<td>Wheat production (=C)</td>
<td>50</td>
<td>77</td>
</tr>
<tr>
<td>Cloth production (=C)</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

- Cloth is relatively cheap in East Asia
- Wheat is relatively cheap in the U.S.
- Direction of trade:
  - U.S. exports wheat for cloth
  - East Asia exports cloth for wheat
- International trade establishes a world price of cloth
- Both countries gain by shifting production toward the good of higher value and trading to obtain the other good
Factor Proportions Model: Impact of Free Trade
Utility and PPC (top); Demand and Supply (bot)

Figures 3.5A (top) and 3.5B (bottom)
Solving for the World Price of Cloth

- Pre-trade prices: U.S. 2.0 bushels/yard
  East Asia 0.67 bu/yard

- World Price (TOT): $0.67 \leq TOT \leq 2.0$

- Which is the right price?
  » An additional constraint: Select TOT so that trade balances
    - US imports of cloth = East Asia exports of cloth AND
    - US exports of wheat = East Asia imports of wheat

- To find the equilibrium TOT, use “Offer Curves”
  (Appendix C)
Factor Proportions Model - Results

✧ Role of factor endowments
  » Pre-trade price differences and country’s comparative advantage arise from international differences in relative factor endowments
  » Country exports good that uses intensively its abundant factor

✧ Incomplete specialization

✧ Trade generates welfare gains by allowing changes in production and consumption patterns
  » Both a shift in production and a rise in the value of production

✧ Trade leads to international equalization of factor prices (labor cost, capital cost) across countries
Factor Proportions Model - Limitations

✦ Emphasis on two factors of production - Labor, Capital
  » Many factors ignored: land, skilled labor, unskilled labor, human capital, financial capital, technology

✦ Extensions to consider
  » Factor growth - population growth, labor migration, adding to or depleting the capital stock
  » Increasing returns to scale in some industries
  » Technological change - effecting labor, or capital in either wheat or cloth industries
  » Strategic considerations
Offer Curves - (Appendix C)

• An “Offer Curve” shows the amount of one good that a country would offer in exchange for another good conditional on the relative price of the two goods.

• Recall that the U.S. was exporting wheat in exchange for cloth. The pre-trade U.S. price was 2 bu./yd. So at lower prices, the U.S. will start importing cloth (it’s cheaper) and exporting wheat.

• Recall also the East Asia was exporting cloth in exchange for wheat. The pre-trade East Asia price was 2/3 bu./yd. So at higher prices, East Asia will start exporting cloth and importing wheat.
At the pre-trade price (2 bu./yd.), the U.S. produces P0 and consumes the same amount. There is no trade, and initial utility is U0.

If cloth is cheaper at only 1 bu/yd. [the green line], this makes wheat more valuable. The U.S. produces at P1, consumes at C1, reaching utility U1.

If cloth is still cheaper at only 0.5 bu./yd. [the pink line], production of wheat increases further to exchange for cloth.
Offers Curves - “Reciprocal Demand Curves”

As the price line (ray from the origin) moves from 2:1 to 1.5:1, to 1:1 and so on, the price of wheat ↑, the U.S. TOT ↑, and the U.S. offers to export more wheat.

As the price line moves from 2/3:1 to 4/5:1, to 1:1 and so on, the price of cloth ↑, the R.O.W. TOT ↑, and ROW is willing to export more cloth.

Somewhere in the middle (the red dot), US exports match ROW imports for wheat and US imports match ROW exports for cloth ↓.

At 1.5:1 (●), US demand for cloth < ROW supply of cloth.

At 4/5:1 (●), US supply of wheat > ROW demand for wheat.

Note: A country’s TOT = Price of exports / Price of imports
US TOT improves as price line flatter; ROW TOT improves as price line steeper.
At left, price line ⇒ \( \frac{P(\text{cloth})}{P(\text{wheat})} \)