Classical International Trade Theory

• Ricardian Comparative Advantage
  – Explains why economists think trade is good

• Heckscher-Ohlin Theorem
  – Explains why countries produce and export the goods they do

• Stopler-Samuelson Theorem
  – Explains why people in poor countries tend to be more favorable to trade than people in rich countries
Building Blocks of Comparative Advantage: Consumption Indifference Curves

- Different combinations of goods leave people equally happy ("indifferent").
- Why is the curve convex? (Declining marginal rate of substitution).
- Anything that permits movement to a higher curve (from $U_0$ to $U_1$) is a good thing because consumption of both goods increases.
  - Hint: free trade permits such a movement
Building Blocks: Production Possibility Frontiers (PPFs)

- Combinations of the two goods that can be produced when the U.S. fully uses its resources.
- Slope is negative due to opportunity costs (cost of increasing production of one good measured in terms of foregone production of the other).
- Each computer produced comes at a marginal opportunity cost of 3 shirts (300/100=3)

Figure 3.2 U.S. Production Possibility Frontier.
Building Blocks: Optimal production & consumption in autarky

- For the U.S., optimality occurs at point of tangency between the production possibility frontier and the highest possible indifference curve.
- Why is this optimal? It efficiently utilizes nation’s resources and maximizes consumer happiness.
China’s Production-Consumption in Autarchy

- China’s PPF has a much steeper slope than the U.S., indicating that the opportunity cost of a computer is much higher in China. China must forgo 20 shirts to produce another computer (400/20=20).

- $e_{ch} = \text{optimal production and consumption, where slopes of Uc and PPF are equal (tangent)}$
Ricardian Model of Trade

• In autarchy, e is optimum consumption for the U.S. and China, respectively.

• With full specialization, U.S. moves to \( P_{us} \) and China moves to \( P_{ch} \).

• Then they trade at a rate of 6 shirts per computer: U.S. imports 150m shirts from China and exports 25m computers to China.

• With trade, consumption in the U.S. moves to \( C_{us} \). At this higher indifference curve, U.S. consumes more of both goods. Same holds for China: complete specialization, then trade, leads to improved outcome, \( C_c \).
Consumption before and after trade

<table>
<thead>
<tr>
<th>(A) Autarchy</th>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>60m</td>
<td>120m</td>
</tr>
<tr>
<td>China</td>
<td>13m</td>
<td>140m</td>
</tr>
<tr>
<td>Total</td>
<td>73m</td>
<td>260M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(B) Full Specialization</th>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>100m</td>
<td>0</td>
</tr>
<tr>
<td>China</td>
<td>0</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>100m</td>
<td>400m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(C) Free Trade</th>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>75m</td>
<td>150 (imports)</td>
</tr>
<tr>
<td>China</td>
<td>25 (imports)</td>
<td>250m</td>
</tr>
<tr>
<td>Total</td>
<td>100m</td>
<td>400m</td>
</tr>
</tbody>
</table>

Without trade, U.S. consumes 60m computers and 120m shirts and China consumes 13m computers and 140m shirts.

Each nation then fully specializes according to its comparative advantage.

US trades China 25m computers for 150m shirts (6 shirts per computer).
Broader Principle is *Comparative Advantage*

- Every country gains from specializing in goods it produces relatively well and trading for goods it produces relatively less well.
- Where is it relatively cheaper to produce computers in terms of shirts forgone? (in the U.S)
- Where is it relatively cheaper to produce shirts in terms of computers forgone? (in China)

<table>
<thead>
<tr>
<th>Country</th>
<th>1 computer</th>
<th>1 shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>3 shirts</td>
<td>0.33 computers</td>
</tr>
<tr>
<td>China</td>
<td>20 shirts</td>
<td>0.05 computers</td>
</tr>
</tbody>
</table>
Comparative Advantage

• Every country gains from specializing in producing goods it produces relatively well and trading for goods it produces relatively less well.

• Gains not dependent on having an “absolute” cost advantage. The U.S. could be better than China at making both computers and shirts.

• But the U.S. has a “comparative advantage” in computers while China has a comparative advantage in shirts due to differences in opportunity costs.

• Truisms: “All countries have a comparative advantage in something. No country can have a comparative advantage in everything.”
Heckscher-Ohlin Theorem

• The HO Theorem explains why countries have comparative advantages in certain goods. HO is based on two suppositions:
  1. Countries differ in endowments of factors of production
     • U.S. is a capital-abundant nation while China is labor-abundant).
  2. Goods differ in their “factor intensities”
     • It takes more capital relative to labor to make computers; it takes more labor relative to capital to make shirts.
Heckscher-Ohlin Theorem (cont.)

• When something it is abundant it is cheap.
• Hence, the Heckscher-Ohlin Theorem: “A country will export those goods whose production requires the intensive use of the factor of production that it has in abundance relative to the rest of the world.”
Stolper-Samuelson Theorem

- Illustrates the distributional effects of trade (who wins, who loses).

- Assumptions:
  - Two industries: an exporting industry (computers), an import-competing industry (shirts)
  - Two factors of production (labor and capital)
**Stolper-Samuelson effects for the U.S**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Computers are intensive in use of capital, and the U.S. has more capital than China.</td>
<td>Shirts are intensive in use of labor, and the U.S. has less labor than China.</td>
</tr>
</tbody>
</table>

With free trade, the price of **computers** increases, enhancing profits in this industry. To expand output, computer makers draw in factors from the import-competing industry. **But the computer industry requires more capital than labor.**

With trade, the price of **shirts** falls, decreasing profits in this industry. Shirt producers reduce production and lay off workers. **But the shirt industry sheds more labor than capital, and there are fewer jobs in the computer industry than in the shirt industry.**
Stolper-Samuelson effects for the U.S.

• Free trade thus produces a shortage of capital and a surplus of labor in the U.S.
  – The shortage of capital results from the fact that the computer industry needs more capital than the shirt industry is able to provide.
  – The surplus of labor results from the fact that the shirt industry sheds more labor than can be employed in the computer industry.
  – The returns to capital thus increase and the returns to labor fall.

• STOLPER-SAMSUELSON THEOREM: Free trade benefits the factor of production that is relatively abundant (capital in U.S.) and harms the locally scare factor (labor in the U.S.), regardless of industry in which it is employed.
Stolper-Samuelson Effects for the U.S. and Brazil

<table>
<thead>
<tr>
<th></th>
<th>Computer industry</th>
<th>Shirt Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Lose</td>
<td>Lose</td>
</tr>
<tr>
<td>Capital</td>
<td>Win</td>
<td>Win</td>
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Winners and losers differ across countries because countries differ in their endowments of factors of production.
Lecture Summary

• Comparative Advantage explains why trade is beneficial for all nations
  – The average citizen does not have an understanding of comp. adv., which may explain why he/she is more likely to oppose trade than an economist

• Heckscher-Ohlin Theorem explains why countries produce and trade the goods they do.

• Stolper-Samuelson Theorem explains the winners and losers of trade within countries
  – Accounts for why the average citizen - a worker – is more positive about trade in poor countries than in rich countries