Interdependence and the Gains from Trade
Consider your typical day:

- You wake up to an alarm clock made in Korea.
- You pour yourself orange juice made from Florida oranges and coffee from beans grown in Brazil.
- You put on some clothes made of cotton grown in Georgia and sewn in factories in Thailand.
- You watch the morning news broadcast from New York on your TV made in Japan.
- You drive to class in a car made of parts manufactured in a half-dozen different countries.

... and you haven’t been up for more than two hours yet!
Interdependence and the Gains from Trade

Remember, economics is the study of how societies produce and distribute goods in an attempt to satisfy the wants and needs of their members.
Interdependence and the Gains from Trade

• How do we satisfy our wants and needs in a global economy?
  – We can be economically self-sufficient.
  – We can specialize and trade with others, leading to economic interdependence.
Interdependence and the Gains from Trade

• Individuals and nations rely on specialized production and exchange as a way to address problems caused by scarcity.

• But this gives rise to two questions:
  – Why is interdependence the norm?
  – What determines production and trade?
Interdependence and the Gains from Trade

• Why is interdependence the norm?
  – Interdependence occurs because people are better off when they specialize and trade with others.

• What determines the pattern of production and trade?
  – Patterns of production and trade are based upon differences in opportunity costs.
Imagine an economic system with only two goods, potatoes and meat and only two people, a potato farmer and a cattle rancher.

- What should each person produce?
- Why should these people trade?
<table>
<thead>
<tr>
<th></th>
<th>Minutes Needed to Make 1 Ounce of:</th>
<th>Amount Produced in 8 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meat</td>
<td>Potatoes</td>
</tr>
<tr>
<td>Farmer</td>
<td>60 min/oz</td>
<td>15 min/oz</td>
</tr>
<tr>
<td>Rancher</td>
<td>20 min/oz</td>
<td>10 min/oz</td>
</tr>
</tbody>
</table>

The Production Opportunities of the Farmer and the Rancher
Suppose the farmer and rancher decide not to engage in trade:

- Each consumes only what he or she can produce alone.
- The production possibilities frontier is also the consumption possibilities frontier.
- Without trade, economic gains are diminished.
Figure 1 The Production Possibilities Frontier

(a) The Farmer’s Production Possibilities Frontier

If there is no trade, the farmer chooses this production and consumption.
Figure 1 The Production Possibilities Curve

(b) The Rancher’s Production Possibilities Frontier

If there is no trade, the rancher chooses this production and consumption.
## Production and Consumption Without Trade

<table>
<thead>
<tr>
<th></th>
<th>Farmer (Meat)</th>
<th>Farmer (Potatoes)</th>
<th>Rancher (Meat)</th>
<th>Rancher (Potatoes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without Trade: Production and Consumption</td>
<td>4 oz</td>
<td>16 oz</td>
<td>12 oz</td>
<td>24 oz</td>
</tr>
</tbody>
</table>
Specialization and Trade

• Suppose instead the farmer and the rancher decide to specialize and trade…
  • Both would be better off if they specialize in producing the product they are more suited to produce, and then trade with each other.
Figure 2 How Trade Expands the Set of Consumption Opportunities

(a) The Farmer’s Production and Consumption

- Farmer’s production without trade
- Farmer’s consumption without trade
- Farmer’s production and consumption with trade
- Farmer’s consumption with trade

Meat (ounces) vs. Potatoes (ounces) graph showing the effects of trade on consumption opportunities.
Figure 2 How Trade Expands the Set of Consumption Opportunities

(b) The Rancher’s Production and Consumption

- Rancher’s production with trade
- Rancher’s consumption with trade
- Rancher’s production and consumption without trade
COMPARATIVE ADVANTAGE

• Differences in the costs of production determine the following:
  – Who should produce what?
  – How much should be traded for each product?
COMPARATIVE ADVANTAGE

- Two ways to measure differences in costs of production:
  - The number of hours required to produce a unit of output (for example, one pound of potatoes).
  - The opportunity cost of sacrificing one good for another.
Absolute Advantage

• The comparison among producers of a good according to their productivity.
  • Describes the productivity of one person, firm, or nation compared to that of another.
  • The producer that requires a smaller quantity of inputs to produce a good is said to have an *absolute advantage* in producing that good.
The Rancher has an absolute advantage in the production of both meat and potatoes. Absolute Advantage

- The Rancher needs only 10 minutes to produce an ounce of potatoes, whereas the Farmer needs 15 minutes.
- The Rancher needs only 20 minutes to produce an ounce of meat, whereas the Farmer needs 60 minutes.
Opportunity Cost and Comparative Advantage

• Compares producers of a good according to their *opportunity cost*, that is, what must be given up to obtain some item.

• The producer who has the smaller opportunity cost of producing a good is said to have a *comparative advantage* in producing that good.

Who has the comparative advantage in the production of each good?
Comparative Advantage and Trade

• Potato costs…
  • The Rancher’s opportunity cost of an ounce of potatoes is $\frac{1}{4}$ an ounce of meat.
  • The Farmer’s opportunity cost of an ounce of potatoes is $\frac{1}{2}$ an ounce of meat.

• Meat costs…
  • The Rancher’s opportunity cost of a pound of meat is only 4 ounces of potatoes.
  • The Farmer’s opportunity cost of an ounce of meat is only 2 ounces of potatoes...
…so, the Rancher has a comparative advantage in the production of meat but the Farmer has a comparative advantage in the production of potatoes.
Comparative Advantage and Trade

• Comparative advantage and differences in opportunity costs are the basis for specialized production and trade.

• Whenever potential trading parties have differences in opportunity costs, they can each benefit from trade.
Gains from Trade

<table>
<thead>
<tr>
<th></th>
<th>Farmer</th>
<th>Rancher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meat</td>
<td>Potatoes</td>
</tr>
<tr>
<td>With Trade:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>0 oz</td>
<td>32 oz</td>
</tr>
<tr>
<td>Trade</td>
<td>Gets 5 oz</td>
<td>Gives 15 oz</td>
</tr>
<tr>
<td>Consumption</td>
<td>5 oz</td>
<td>17 oz</td>
</tr>
<tr>
<td>GAINS FROM TRADE:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in Consumption</td>
<td>+1 oz</td>
<td>+1 oz</td>
</tr>
</tbody>
</table>
• Benefits of Trade

• Trade can benefit everyone in a society because it allows people to specialize in activities in which they have a comparative advantage.
FYI—The Legacy of Adam Smith and David Ricardo

• Adam Smith
  • In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith performed a detailed analysis of trade and economic interdependence, which economists still adhere to today.

• David Ricardo
  • In his 1816 book *Principles of Political Economy and Taxation*, David Ricardo developed the principle of comparative advantage as we know it today.
APPLICATIONS OF COMPARATIVE ADVANTAGE

• Should Tiger Woods Mow His Own Lawn?
APPLICATIONS OF COMPARATIVE ADVANTAGE

Should the United States trade with other countries?

• Each country has many citizens with different interests. International trade can make some individuals worse off, even as it makes the country as a whole better off.

  – **Imports**—goods produced abroad and sold domestically
  – **Exports**—goods produced domestically and sold abroad
Summary

- Each person consumes goods and services produced by many other people both in our country and around the world.
- Interdependence and trade are desirable because they allow everyone to enjoy a greater quantity and variety of goods and services.
• There are two ways to compare the ability of two people producing a good.
  – The person who can produce a good with a smaller quantity of inputs has an absolute advantage.
  – The person with a smaller opportunity cost has a comparative advantage.
• The gains from trade are based on comparative advantage, not absolute advantage.

• Trade makes everyone better off because it allows people to specialize in those activities in which they have a comparative advantage.

• The principle of comparative advantage applies to countries as well as people.