Interdependence and the Gains from Trade
A Parable for the Modern Economy

• Only two goods
  – Meat
  – Potatoes

• Only two people
  – A cattle rancher named Rose
  – A potato farmer named Frank
  – Both would like to eat both meat and potatoes
A Parable for the Modern Economy

• If Rose produces only meat and Frank produces only potatoes
  – Both gain from trade
• If both Rose and Frank produce both meat and potatoes
  – Both gain from specialization and trade
• Production possibilities frontier
  – Various mixes of output that an economy can produce
Panel (a) shows the production opportunities available to Frank the farmer and Rose the rancher.
Figure 1
The Production Possibilities Frontier (b, c)

Panel (b) shows the combinations of meat and potatoes that Frank can produce. Panel (c) shows the combinations of meat and potatoes that Rose can produce. Both production possibilities frontiers are derived assuming that Frank and Rose each work 8 hours per day. If there is no trade, each person’s production possibilities frontier is also his or her consumption possibilities frontier.

(b) Frank’s production possibilities frontier

(c) Rose’s production possibilities frontier

If there is no trade, Frank chooses this production and consumption.

If there is no trade, Rose chooses this production and consumption.
A Parable for the Modern Economy

• Specialization and trade
  – Farmer Frank specializes in growing potatoes
    • More time growing potatoes
    • Less time raising cattle
  – Rancher Rose specializes in raising cattle
    • More time raising cattle
    • Less time growing potatoes
  – Trade: 5 oz of meat for 15 oz of potatoes
The proposed trade between Frank the farmer and Rose the rancher offers each of them a combination of meat and potatoes that would be impossible in the absence of trade. In panel (a), Frank gets to consume at point A* rather than point A. In panel (b), Rose gets to consume at point B* rather than point B. Trade allows each to consume more meat and more potatoes.
The proposed trade between Frank the farmer and Rose the rancher offers each of them a combination of meat and potatoes that would be impossible in the absence of trade. In panel (a), Frank gets to consume at point $A^*$ rather than point $A$. In panel (b), Rose gets to consume at point $B^*$ rather than point $B$. Trade allows each to consume more meat and more potatoes.

<table>
<thead>
<tr>
<th></th>
<th>Frank</th>
<th>Rose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meat</td>
<td>Potatoes</td>
</tr>
<tr>
<td><strong>Without Trade:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production and Consumption</td>
<td>4 oz</td>
<td>16 oz</td>
</tr>
<tr>
<td><strong>With Trade:</strong></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><strong>GAINS FROM TRADE:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in Consumption</td>
<td>+1 oz</td>
<td>+1 oz</td>
</tr>
</tbody>
</table>
Comparative Advantage

• Absolute advantage
  – The ability to produce a good using fewer inputs than another producer
  – In producing meat: Rose
    • Rose needs 20 min. to produce 1 oz. of meat
    • Frank needs 60 minutes
  – In producing potatoes: Rose
    • Rose needs 10 min. to produce 1 oz. of potatoes
    • Frank needs 15 minutes
Comparative Advantage

• Opportunity cost
  – Whatever must be given up to obtain some item
  – Measures the trade-off between the two goods that each producer faces
### Table 1
The Opportunity Cost of Meat and Potatoes

<table>
<thead>
<tr>
<th></th>
<th>Opportunity Cost of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 oz of Meat</td>
</tr>
<tr>
<td>Frank the farmer</td>
<td>4 oz potatoes</td>
</tr>
<tr>
<td>Rose the rancher</td>
<td>2 oz potatoes</td>
</tr>
</tbody>
</table>
Comparative Advantage

• Comparative advantage
  – The ability to produce a good at a lower opportunity cost than another producer
  – Reflects the relative opportunity cost

• Principle of comparative advantage
  • Each good should be produced by the individual that has the smaller opportunity cost of producing that good
  – Specialize according to comparative advantage
Comparative Advantage

• One person
  – Can have absolute advantage in both goods
  – Cannot have comparative advantage in both goods

• For different opportunity costs
  • One person has comparative advantage in one good
  • The other person has comparative advantage in the other good
Comparative Advantage

• Opportunity cost of one good
  – Inverse of the opportunity cost of the other

• Gains from specialization and trade
  – Based on comparative advantage
  – Total production in economy rises
    • Increase in the size of the economic pie
    • Everyone is better off
Comparative Advantage

- Trade can benefit everyone in society
  - Allows people to specialize
- The price of trade
  - Must lie between the two opportunity costs
- Principle of comparative advantage explains:
  - Interdependence
  - Gains from trade
Applications of Comparative Advantage

Should Tom Brady Mow His Own Lawn?

- Brady, in 2 hours
  - Mow his lawn, or
  - Film a TV commercial, earn $20,000

- Forest Gump, in 4 hours
  - Mow Brady’s lawn
  - Work at McDonald’s, earn $40

“They did a nice job mowing this grass.”
Applications of Comparative Advantage

Should the U.S. trade with other countries?

- **Imports**
  - Goods produced abroad and sold domestically

- **Exports**
  - Goods produced domestically and sold abroad
Applications of Comparative Advantage

Should the U.S. trade with other countries?

• U.S and Japan

  – Each produces food and cars
  – One American worker, one month
    • One car, or
    • Two tons of food
  – One Japanese worker, one month
    • One car
    • One ton of food
Applications of Comparative Advantage

• Principle of comparative advantage
  – Each good should be produced by the country with the smaller opportunity cost of producing that good

• Specialization and trade
  – All countries have more food and more cars