In this chapter, look for the answers to these questions

- Why do people—and nations—choose to be economically interdependent?
- **How** can trade make everyone better off?
- What is absolute advantage?
- What is comparative advantage?
- How are these concepts similar?
- How are they different?
Interdependence

- One of the Ten Principles from Chapter 1: *Trade can make everyone better off.*

- We now learn why people—and nations—choose to be interdependent, and how they can gain from trade.
Our Example

- Two countries: the U.S. and Japan
- Two goods: computers and wheat
- One resource: labor, measured in hours
- We will look at how much of both goods each country produces and consumes
  - if the country chooses to be self-sufficient
  - if it trades with the other country
Production Possibilities in the U.S.

- The U.S. has 50,000 hours of labor available for production, per month.
- Producing one computer requires 100 hours of labor.
- Producing one ton of wheat requires 10 hours of labor.
The U.S. PPF

The U.S. has enough labor to produce 500 computers, or 5000 tons of wheat, or any combination along the PPF.
The U.S. Without Trade

Suppose the U.S. uses half its labor to produce each of the two goods. Then it will produce and consume 250 computers and 2500 tons of wheat.
Active Learning 1

Derive Japan’s PPF

Use the following information to draw Japan’s PPF.

- Japan has 30,000 hours of labor available for production, per month.
- Producing one computer requires 125 hours of labor.
- Producing one ton of wheat requires 25 hours of labor.

Your graph should measure computers on the horizontal axis.
Japan's PPF

Japan has enough labor to produce 240 computers, or 1200 tons of wheat, or any combination along the PPF.
Japan Without Trade

Suppose Japan uses half its labor to produce each good. Then it will produce and consume 120 computers and 600 tons of wheat.
Consumption With and Without Trade

Without trade,
- U.S. consumers get 250 computers and 2500 tons wheat.
- Japanese consumers get 120 computers and 600 tons wheat.

We will compare consumption without trade to consumption with trade.

First, we need to see how much of each good is produced and traded by the two countries.
ACTIVE LEARNING 2

Production under trade

1. Suppose the U.S. produces 3400 tons of wheat. How many computers would the U.S. be able to produce with its remaining labor? Draw the point representing this combination of computers and wheat on the U.S. PPF.

2. Suppose Japan produces 240 computers. How many tons of wheat would Japan be able to produce with its remaining labor? Draw this point on Japan’s PPF.
Producing 3400 tons of wheat requires 34,000 labor hours.

The remaining 16,000 labor hours are used to produce 160 computers.
Producing 240 computers requires all of Japan’s 30,000 labor hours. So, Japan would produce 0 tons of wheat.
Exports & Imports

- **Exports:**
  goods produced domestically and sold abroad

- **Imports:**
  goods produced abroad and sold domestically
Suppose the U.S. exports 700 tons of wheat to Japan, and imports 110 computers from Japan. (So, Japan imports 700 tons wheat and exports 110 computers.)

- How much of each good is consumed in the U.S.? Plot this combination on the U.S. PPF.
- How much of each good is consumed in Japan? Plot this combination on Japan’s PPF.
U.S. Consumption With Trade

<table>
<thead>
<tr>
<th></th>
<th>computers</th>
<th>wheat</th>
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<tbody>
<tr>
<td>produced</td>
<td>160</td>
<td>3400</td>
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<tr>
<td>+ imported</td>
<td>110</td>
<td>0</td>
</tr>
<tr>
<td>− exported</td>
<td>0</td>
<td>700</td>
</tr>
<tr>
<td>= amount consumed</td>
<td>270</td>
<td>2700</td>
</tr>
</tbody>
</table>

Wheat (tons)

Computers
### Japan’s Consumption With Trade

<table>
<thead>
<tr>
<th></th>
<th>Computers</th>
<th>Wheat</th>
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<tbody>
<tr>
<td>produced</td>
<td>240</td>
<td>0</td>
</tr>
<tr>
<td>+ imported</td>
<td>0</td>
<td>700</td>
</tr>
<tr>
<td>− exported</td>
<td>110</td>
<td>0</td>
</tr>
<tr>
<td>= amount</td>
<td>130</td>
<td>700</td>
</tr>
<tr>
<td>consumed</td>
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The graph illustrates the consumption of wheat and computers, showing how production, imports, and exports contribute to the total consumption.

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Trade Makes Both Countries Better Off

<table>
<thead>
<tr>
<th></th>
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<th>Japan</th>
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<tbody>
<tr>
<td></td>
<td>consumption without trade</td>
<td>consumption without trade</td>
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<tr>
<td></td>
<td>consumption with trade</td>
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<tr>
<td></td>
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<td>gains from trade</td>
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<tr>
<td></td>
<td>computers</td>
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<tr>
<td></td>
<td>250</td>
<td>270</td>
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<tr>
<td></td>
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<td>2700</td>
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<tr>
<td></td>
<td>wheat</td>
<td>wheat</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>700</td>
</tr>
</tbody>
</table>
Where Do These Gains Come From?

- **Absolute advantage:** the ability to produce a good using fewer inputs than another producer

- The U.S. has an absolute advantage in wheat: producing a ton of wheat uses 10 labor hours in the U.S. vs. 25 in Japan.

- If each country has an absolute advantage in one good and specializes in that good, then both countries can gain from trade.
Where Do These Gains Come From?

- Which country has an absolute advantage in computers?
- Producing one computer requires 125 labor hours in Japan, but only 100 in the U.S.
- The U.S. has an absolute advantage in both goods!

So why does Japan specialize in computers? Why do both countries gain from trade?
Two Measures of the Cost of a Good

- Two countries can gain from trade when each specializes in the good it produces at lowest cost.
- Absolute advantage measures the cost of a good in terms of the inputs required to produce it.
- Recall: Another measure of cost is opportunity cost.
- In our example, the opportunity cost of a computer is the amount of wheat that could be produced using the labor needed to produce one computer.
Opportunity Cost and Comparative Advantage

- **Comparative advantage**: the ability to produce a good at a lower opportunity cost than another producer

- Which country has the comparative advantage in computers?

- To answer this, must determine the opportunity cost of a computer in each country.
Opportunity Cost and Comparative Advantage

- The opportunity cost of a computer is
  - 10 tons of wheat in the U.S.:
    Producing one computer requires 100 labor hours, which instead could produce 10 tons of wheat.
  - 5 tons of wheat in Japan:
    Producing one computer requires 125 labor hours, which instead could produce 5 tons of wheat.

- So, Japan has a comparative advantage in computers. *Lesson: Absolute advantage is not necessary for comparative advantage!*
Comparative Advantage and Trade

- Gains from trade arise from comparative advantage (differences in opportunity costs).
- When each country specializes in the good(s) in which it has a comparative advantage, total production in all countries is higher, the world’s “economic pie” is bigger, and all countries can gain from trade.
- The same applies to individual producers who benefit by specializing in different goods and trading with each other.
Absolute and comparative advantage

Argentina and Brazil each have 10,000 hours of labor per month.

In Argentina,
- producing one pound coffee requires 2 hours
- producing one bottle wine requires 4 hours

In Brazil,
- producing one pound coffee requires 1 hour
- producing one bottle wine requires 5 hours

Which country has an absolute advantage in the production of coffee? Which country has a comparative advantage in the production of wine?
Brazil has an absolute advantage in coffee:
- Producing a pound of coffee requires only one labor-hour in Brazil, but two in Argentina.

Argentina has a comparative advantage in wine:
- Argentina’s opp. cost of wine is two pounds of coffee, because the four labor-hours required to produce a bottle of wine could instead produce two pounds of coffee.
- Brazil’s opp. cost of wine is five pounds of coffee.
Unanswered Questions…

- We made a lot of assumptions about the quantities of each good that each country produces, trades, and consumes, and the price at which the countries trade wheat for computers.

- In the real world, these quantities and prices would be determined by the preferences of consumers and the technology and resources in both countries.

- We will begin to study this in the next chapter.

- For now, though, our goal was merely to see how trade can make everyone better off.
David Ricardo’s gains from trade

- The model we just did was first introduced in a book called “Principles of Political Economy and Taxation”, in 1817 by David Ricardo.

- David Ricardo is often credited with systematizing economics, and was one of the most influential of the classical economists, along with Thomas Malthus, Adam Smith, and John Stuart Mill.

- He was also a member of Parliament, businessman, financier and speculator, who amassed a considerable personal fortune.

- Ricardo asked: *If one country is more productive than another country in every productive activity, would both countries benefit from trade?*
David Ricardo’s gains from trade

- His “law of comparative advantage” showed that the answer is yes: Correctly, accepting their current levels of technology as given, it is better for countries to specialize in things that they are relatively better at.

- Criticism: “It fails when a country wants to acquire more advanced technologies so that it can do more difficult things that few others can do, that is, when it wants to develop its economy. It takes time and experience to absorb new technologies, so technologically backward producers need a period of protection from international competition during this period of learning. Such protection is costly. However, it is a price that has to be paid if it wants to develop advanced industries. Ricardo’s theory is for those who accept the status quo but not for those who want to change it.” from Bad Samaritans by Ha-Joon Chang
Tariffs and Protectionism

- ‘…With only a few exceptions, all of today’s rich countries, including Britain and the US – the supposed homes of free trade and free market – have become rich through the combinations of protectionism, subsidies and other policies that today they advise the developing countries not to adopt. Free-market policies have made few countries rich so far and will make few rich in the future.’

- ‘…In the same way in which the US was the most protectionist country in the world during most of its phase of ascendancy (from the 1830s to the 1940s), Britain was one of the world’s most protectionist countries during much of its own economic rise (from the 1720s to the 1850s).’

from 23 Things They Don’t Tell You about Capitalism by Ha-Joon Chang.
Tariffs and Protectionism

- I don’t know much about the tariff. But I know this much, Abraham Lincoln is supposed to have said: “When we buy manufactured goods abroad, we get the goods and the foreigner gets the money. When we buy the manufactured goods at home, we get both the goods and the money.”

(quoted in Dani Rodrik, Symposium on Globalization in Perspective: An Introduction, Journal of Economic Perspectives; Fall 1998 pages 3-8.)

- Abraham Lincoln (1809 –1865), is the 16th President of the United States. He served from March 1861 until his assassination. He led the country through a great constitutional, military and moral crisis—the American Civil War— ending slavery and promoting economic and financial modernization.
Summary

• Interdependence and trade allow everyone to enjoy a greater quantity and variety of goods & services.

• Comparative advantage means being able to produce a good at a lower opportunity cost. Absolute advantage means being able to produce a good with fewer inputs.

• When people—or countries—specialize in the goods in which they have a comparative advantage, the economic “pie” grows and trade can make everyone better off.