

# Chapter 3 Interdependence and the Gains from Trade

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## Consider these points:

- You wake up to an alarm clock made in Korea.
- You pour yourself orange juice made from Florida oranges and coffee made from Brazilian beans
- You put on aloha wear clothes made of cotton grown in Georgia and sewn in Thai factories.
- You watch the Today Show broadcast from Rockefeller Plaza in NYC on a TV made in Japan.
- You drive to class in a car made of parts manufactured in 25 different countries and assembled in Alabama.

## Interdependence

Every day you rely on many people from around the world, most of whom you've never met, to provide you with the goods and services you enjoy.

hair gel from  
Cleveland, OH

cell phone  
from Taiwan

dress shirt  
from China

coffee from  
Kenya



## 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.
- Why are some leaders in Hawaii and the United States advocating self sufficiency?
  - They represent or are associated with specific industries and workers who will benefit. They rarely acknowledge the overall losses to others in society from self sufficiency.

## 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. The analysis provides foundations for today's theory of trade.
- David Ricardo
  - In his 1816 book *Principles of Political Economy and Taxation*, David Ricardo developed the principle of comparative advantage, the cornerstone of today's theory of trade.

## Production Possibilities

- Self-Sufficiency
- By ignoring each other:
  - Each consumes what they each produce.
  - The production possibilities frontier is also the consumption possibilities frontier.
  - Without trade, economic opportunities are diminished.

## 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.

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## 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

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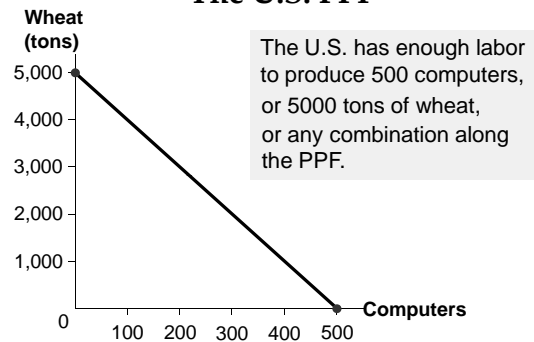
## Production Possibilities in the U.S.

- 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.

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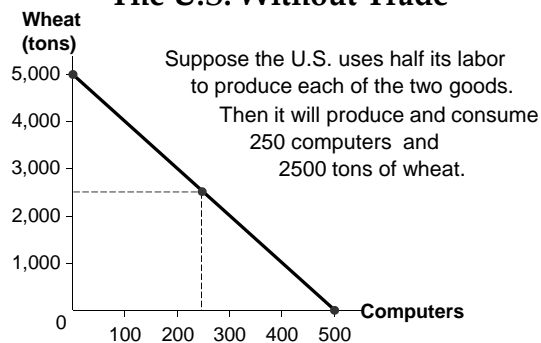
## The U.S. PPF



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## The U.S. Without Trade



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## ACTIVE LEARNING 1

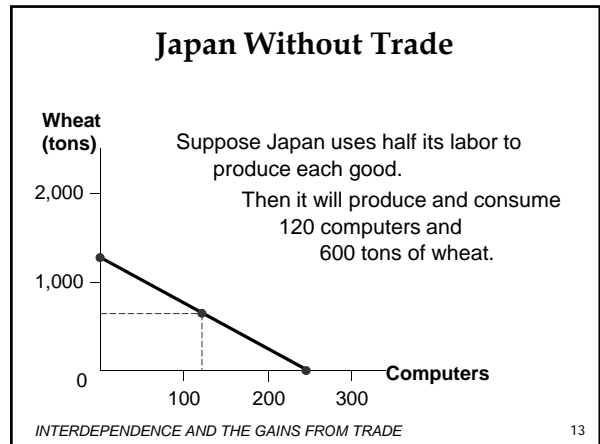
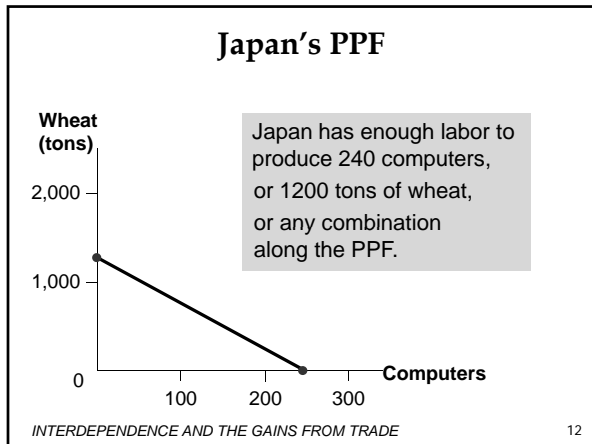
### Derive Japan's PPF

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.

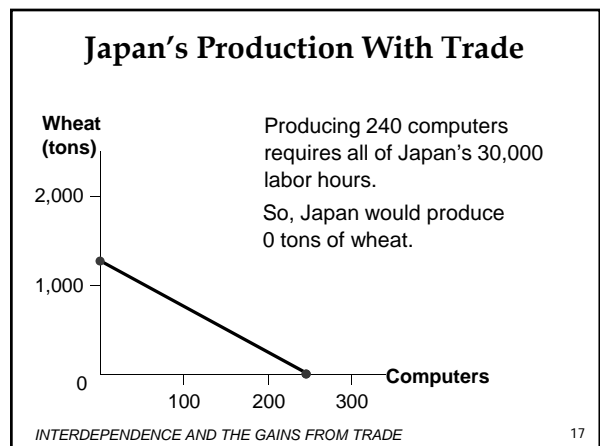
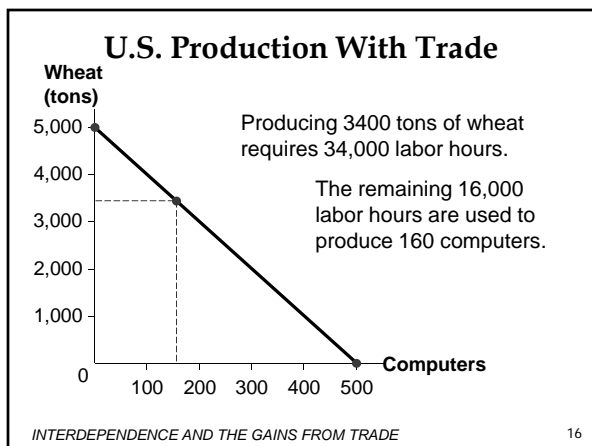
Your graph should measure computers on the horizontal axis.

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- ### 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.
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- ### 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.
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### Basic international trade terms

- **Exports:**  
goods produced domestically and sold abroad  
**To export** means to sell domestically produced goods abroad.
- **Imports:**  
goods produced abroad and sold domestically  
**To import** means to purchase goods produced in other countries.

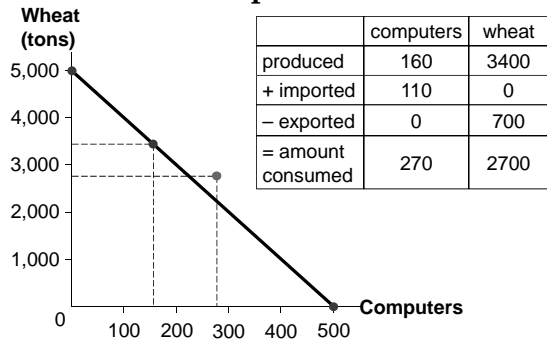
### ACTIVE LEARNING 3

### Consumption under trade

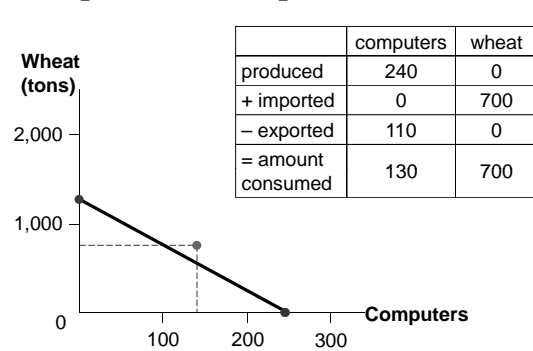
Suppose the U.S. exports 700 tons of wheat to Japan, and imports 110 computers from Japan. (So, Japan imports 700 tons wheat and exports 110 computers.)

- 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



### Japan's Consumption With Trade



### Trade Makes Both Countries Better Off

U.S.			
	consumption without trade	consumption with trade	gains from trade
computers	250	270	<b>20</b>
wheat	2,500	2,700	<b>200</b>
Japan			
	consumption without trade	consumption with trade	gains from trade
computers	120	130	<b>10</b>
wheat	600	700	<b>100</b>

### 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 opp. cost of a computer in each country.

### Opportunity Cost and Comparative Advantage

- The opp. cost of a computer is
  - 10 tons of wheat in the U.S., because producing one computer requires 100 labor hours, which instead could produce 10 tons of wheat.
  - 5 tons of wheat in Japan, because 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 (like the farmer and the rancher) specializing in different goods and trading with each other.

### ACTIVE LEARNING 4

#### **Absolute & 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?

#### ACTIVE LEARNING 4

### Answers

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.

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### APPLICATIONS OF COMPARATIVE ADVANTAGE

- News Flash!! We have just learned that Tiger Woods can mow his lawn faster than any human being! Should he skip this week's golf tournament and mow his lawn instead?



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### Trade Without Production

- Trade takes place because of differential evaluations.
- Just go to E-Bay, Craig's List.
- The Economic Consequences of the Peace
  - First Edition
  - How much is someone in the class willing to pay?
  - How much am I willing to pay?
  - What's the market price?

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### Exchange With Imperfect Information

- What if we are not fully informed?
  - Gather information.
  - Information search is costly.
  - It rarely pays to be fully informed.
- Exchange often occurs with imperfect information.
  - Ex post regret is possible.
  - Caveat emptor?

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### Certain Assumptions

- Buyer and Seller are well informed about the product.
- Sale is voluntary.

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### CHAPTER 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.

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