

# In this Lecture, look for the answers to these questions

- What are economists' two roles? How do they differ?
- What are models? How do economists use them?
- What are the elements of the Circular-Flow Diagram?  
What concepts does the diagram illustrate?
- How is the Production Possibilities Frontier related to opportunity cost? What other concepts does it illustrate?
- What is the difference between microeconomics and macroeconomics? Between positive and normative?

# The Economist as Scientist

- Economists play two roles:

1. Scientists: try to explain the world
2. Policy advisors: try to improve it

- In the first, economists employ the **scientific method**,

the dispassionate development and testing of theories about how the world works.

The road  
to the hell  
is paved with  
good will.

好心办坏事

# Assumptions & Models

- Assumptions simplify the complex world, make it easier to understand.
- Example: To study international trade, assume two countries and two goods.  
Unrealistic, but simple to learn and gives useful insights about the real world.
- **Model**: a highly simplified representation of a more complicated reality.  
Economists use models to study economic issues.

# Some Familiar Models

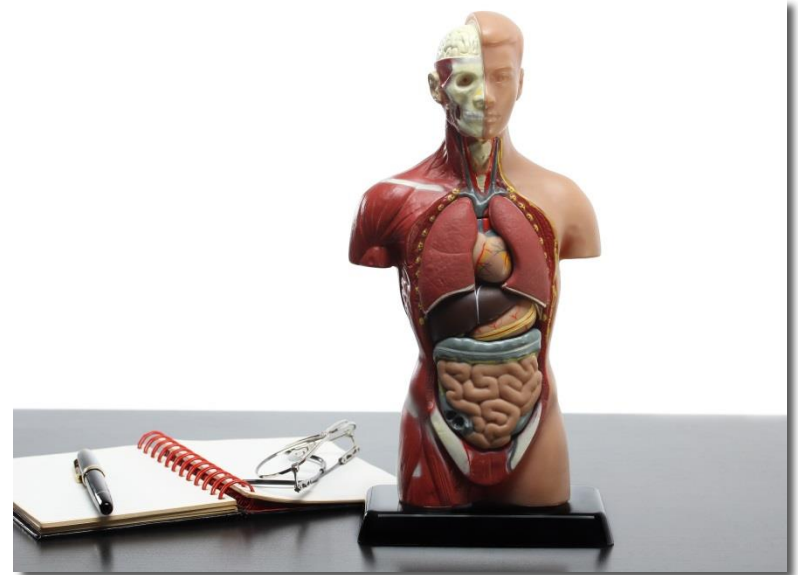


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A road map

# Some Familiar Models

A model of human anatomy from high school biology class



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# Some Familiar Models



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A model airplane

# Some Familiar Models

The model teeth at the  
dentist's office



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# Our First Model:

## The Circular-Flow Diagram

- The **Circular-Flow Diagram**: a visual model of the economy, shows how dollars flow through markets among households and firms
- Two types of “actors”:
  - households
  - firms
- Two markets:
  - the market for goods and services
  - the market for “factors of production”



# Factors of Production

- **Factors of production:** the resources the economy uses to produce goods & services, including
  - labor
  - land
  - capital (buildings and machines used in production)

## FIGURE 1: The Circular-Flow Diagram

### Households:

- Own the factors of production, sell/rent them to firms for income
- Buy and consume goods & services

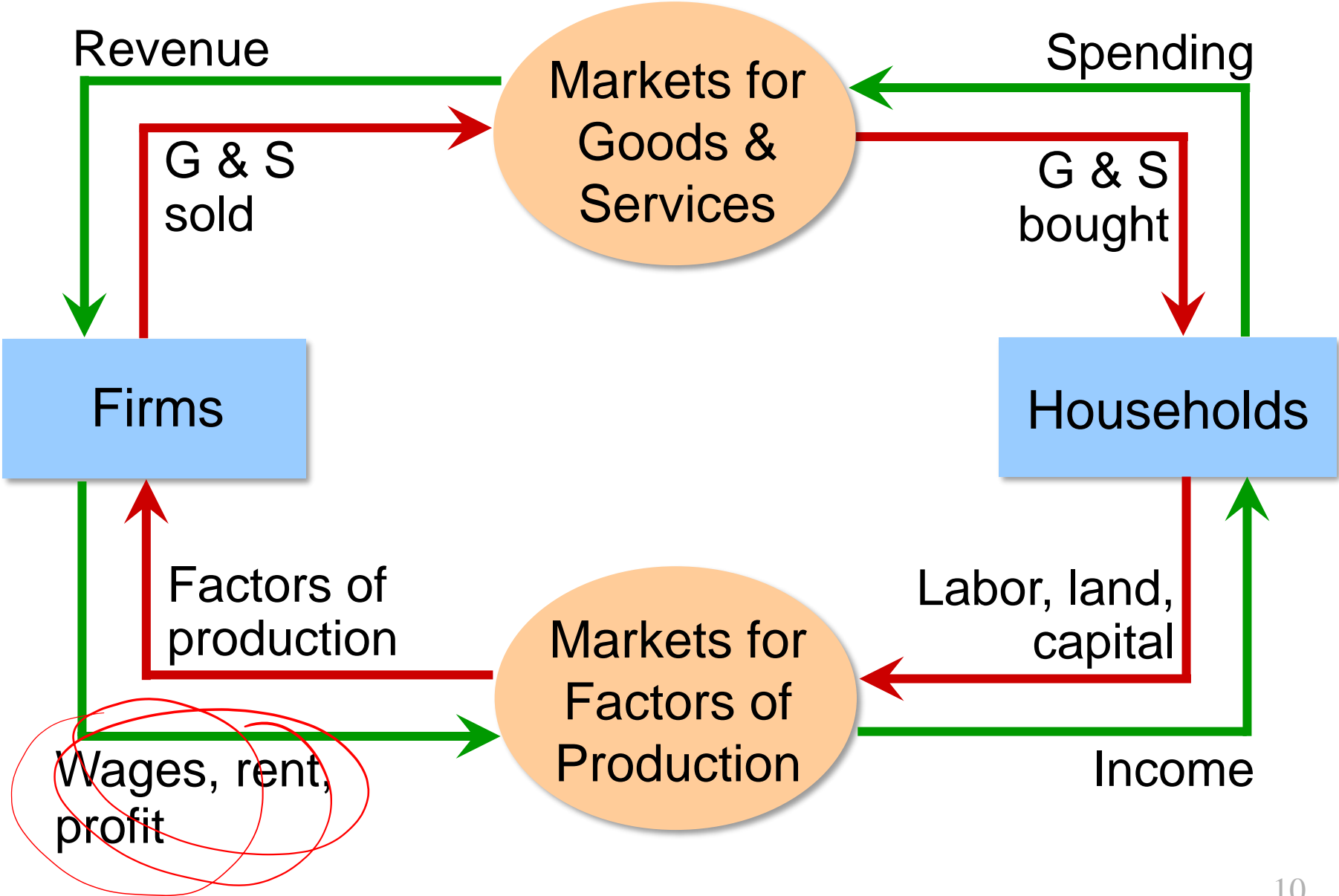
Firms

Households

### Firms:

- Buy/hire factors of production, use them to produce goods and services
- Sell goods & services

**FIGURE 1:** The Circular-Flow Diagram



## Our Second Model:

### The Production Possibilities Frontier

- The **Production Possibilities Frontier (PPF)**:  
a graph that shows the combinations of two goods the economy can possibly produce given the available resources and the available technology
- Example:
  - Two goods: computers and wheat
  - One resource: labor (measured in hours)
  - Economy has 50,000 labor hours per month available for production.

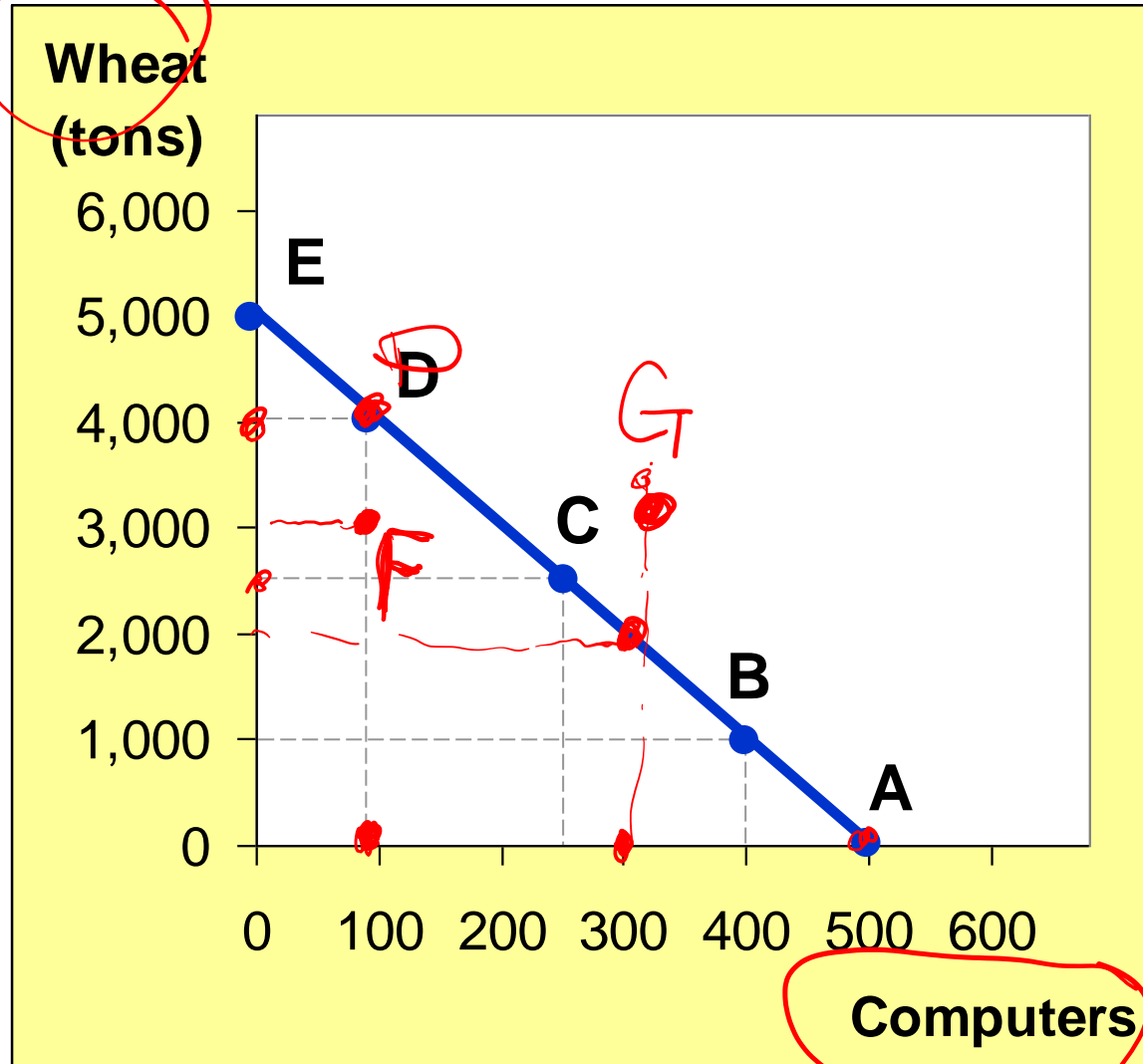
## PPF Example

- Producing one computer requires 100 hours labor.
- Producing one ton of wheat requires 10 hours labor.

	Employment of labor hours		Production	
	Computers	Wheat	Computers	Wheat
A	50,000	0	500	0
B	40,000	10,000	400	1,000
C	25,000	25,000	250	2,500
D	10,000	40,000	100	4,000
E	0	50,000	0	5,000

# PPF Example

Point on graph	Production	
	Com- puters	Wheat
A	500	0
B	400	1,000
C	250	2,500
D	100	4,000
E	0	5,000



# ACTIVE LEARNING 1

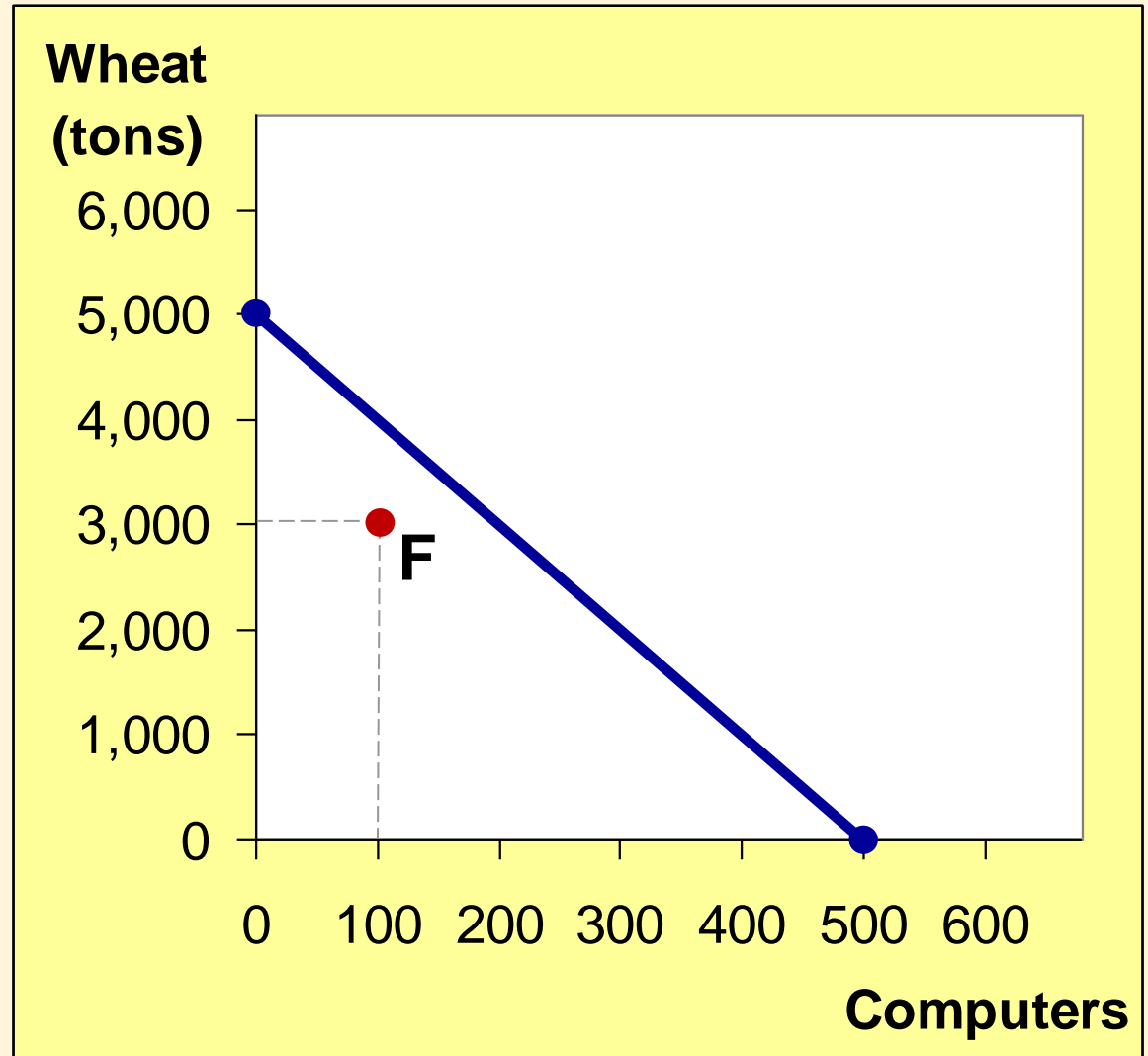
## Points off the PPF

- A.** On the graph, find the point that represents (100 computers, 3000 tons of wheat), label it **F**. Would it be possible for the economy to produce this combination of the two goods? Why or why not?
- B.** Next, find the point that represents (300 computers, 3500 tons of wheat), label it **G**. Would it be possible for the economy to produce this combination of the two goods?

# ACTIVE LEARNING 1

## Answers

- Point **F**:  
100 computers,  
3000 tons wheat
- Point **F** requires  
40,000 hours  
of labor.  
Possible but  
not efficient:  
could get more  
of either good  
w/o sacrificing  
any of the other.

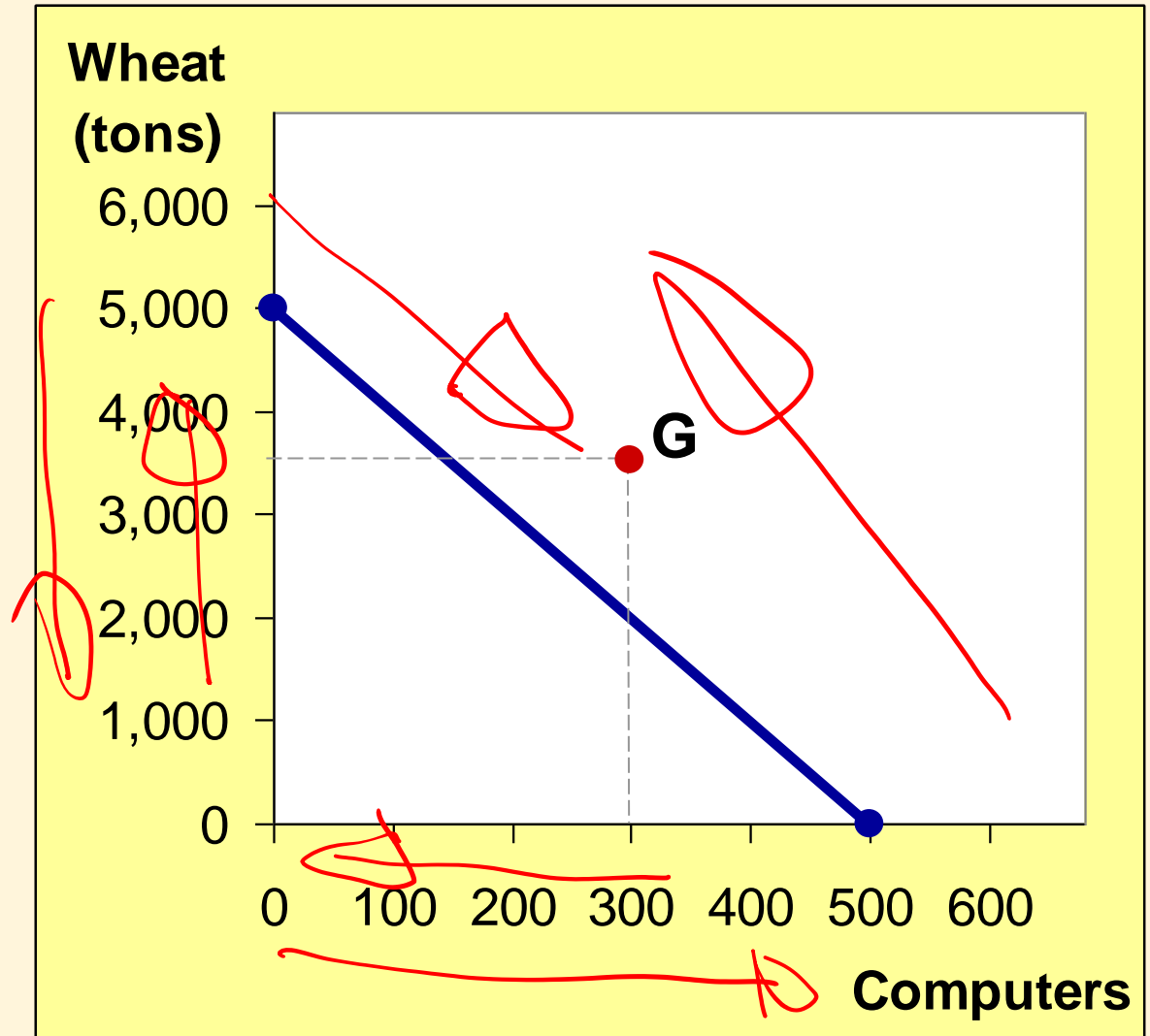




# ACTIVE LEARNING 1

## Answers

- Point **G**:  
300 computers,  
3500 tons wheat
- Point **G** requires  
65,000 hours  
of labor.  
Not possible  
because  
economy  
only has  
50,000 hours.



# The PPF: What We Know So Far

## Points on the PPF (like **A – E**)

- possible
- efficient: all resources are fully utilized

## Points under the PPF (like **F**)

- possible
- not efficient: some resources underutilized  
(e.g., workers unemployed, factories idle)

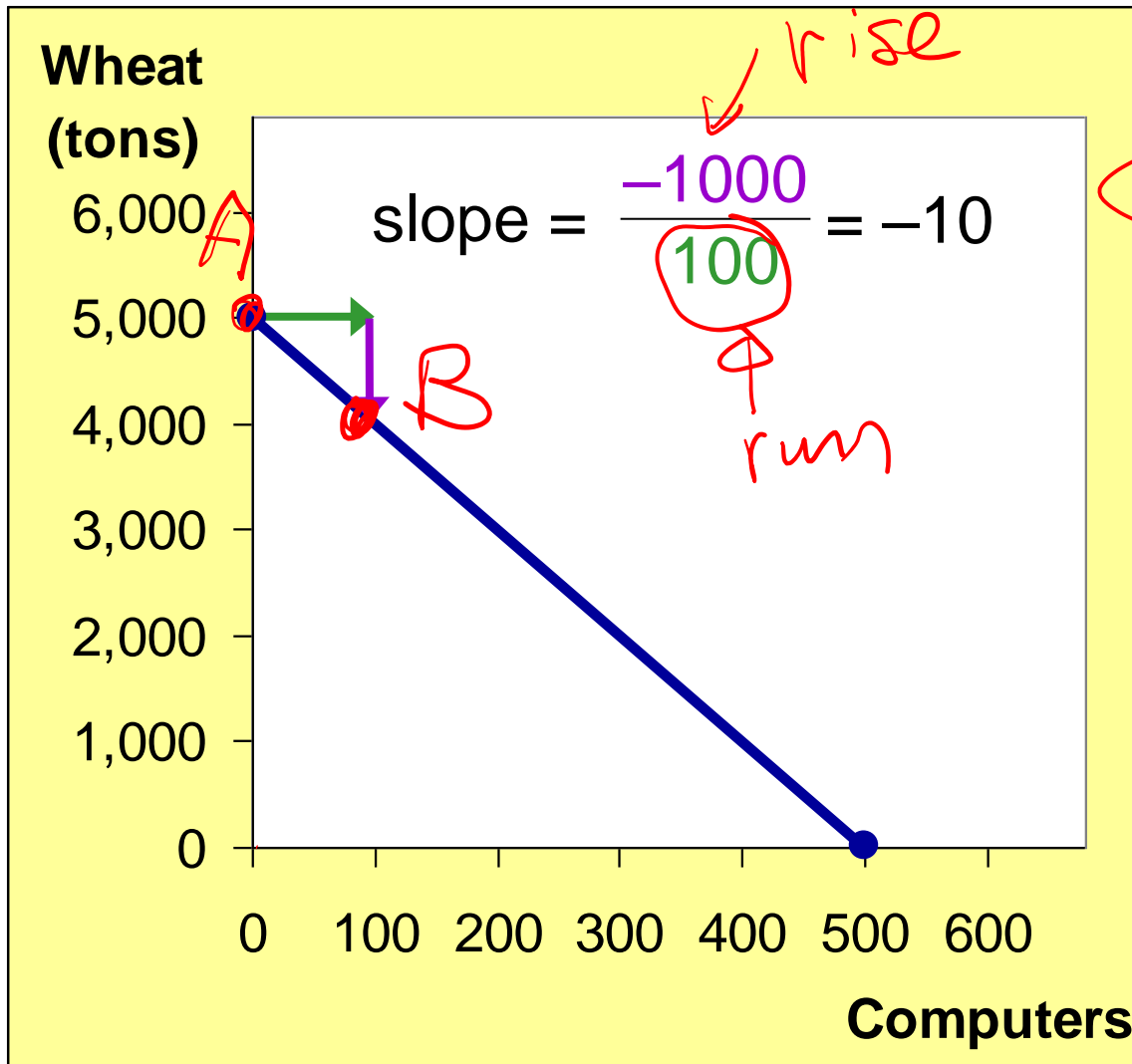
## Points above the PPF (like **G**)

- not possible

# The PPF and Opportunity Cost

- Recall: The **opportunity cost** of an item is what must be given up to obtain that item.
- Moving along a PPF involves shifting resources (e.g., labor) from the production of one good to the other.
- Society faces a tradeoff: Getting more of one good requires sacrificing some of the other.
- The slope of the PPF tells you the opportunity cost of one good in terms of the other.

# The PPF and Opportunity Cost



The slope of a line equals the “**rise** over the **run**,” the amount the line rises when you move to the right by one unit.

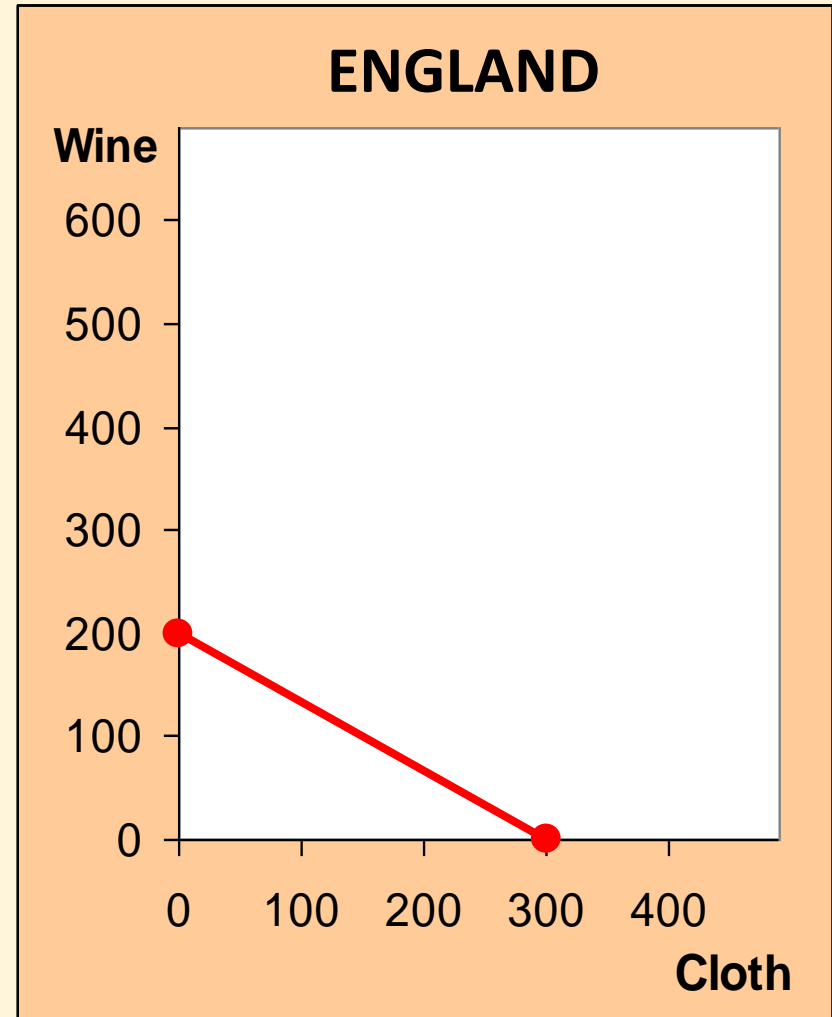
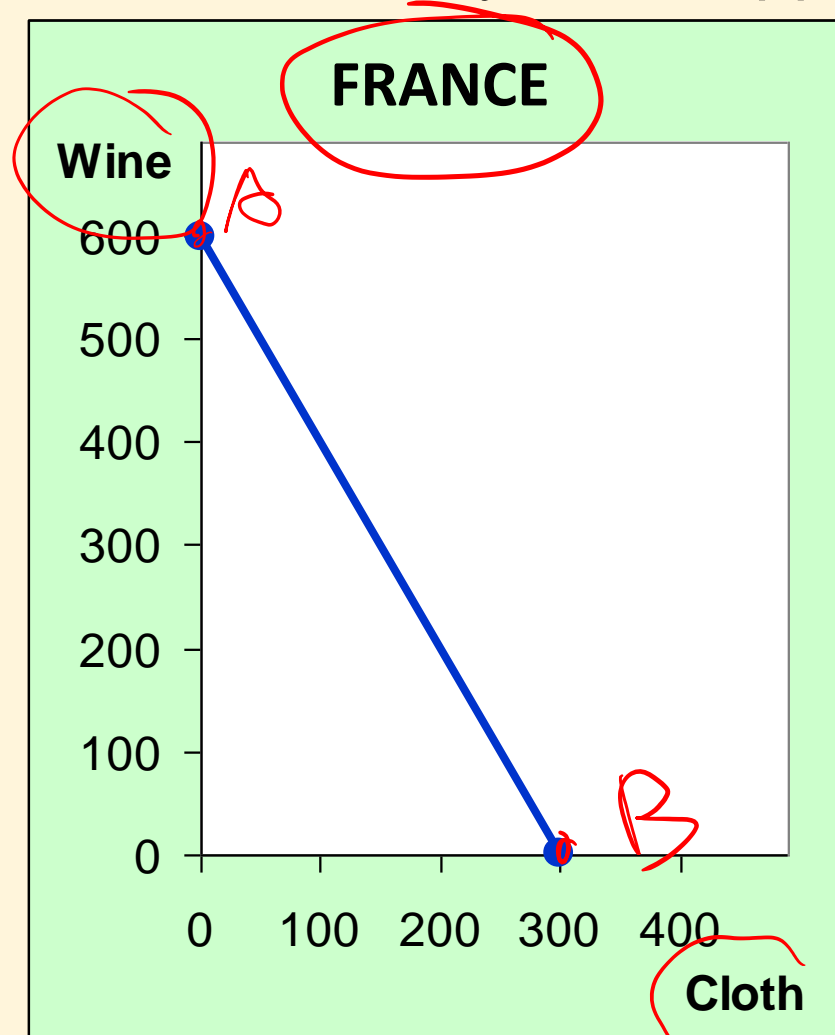
Here, the opportunity cost of a computer is 10 tons of wheat.

Handwritten annotation:  $\text{slope} = \frac{\text{rise}}{\text{run}}$

## ACTIVE LEARNING 2

### PPF and Opportunity Cost

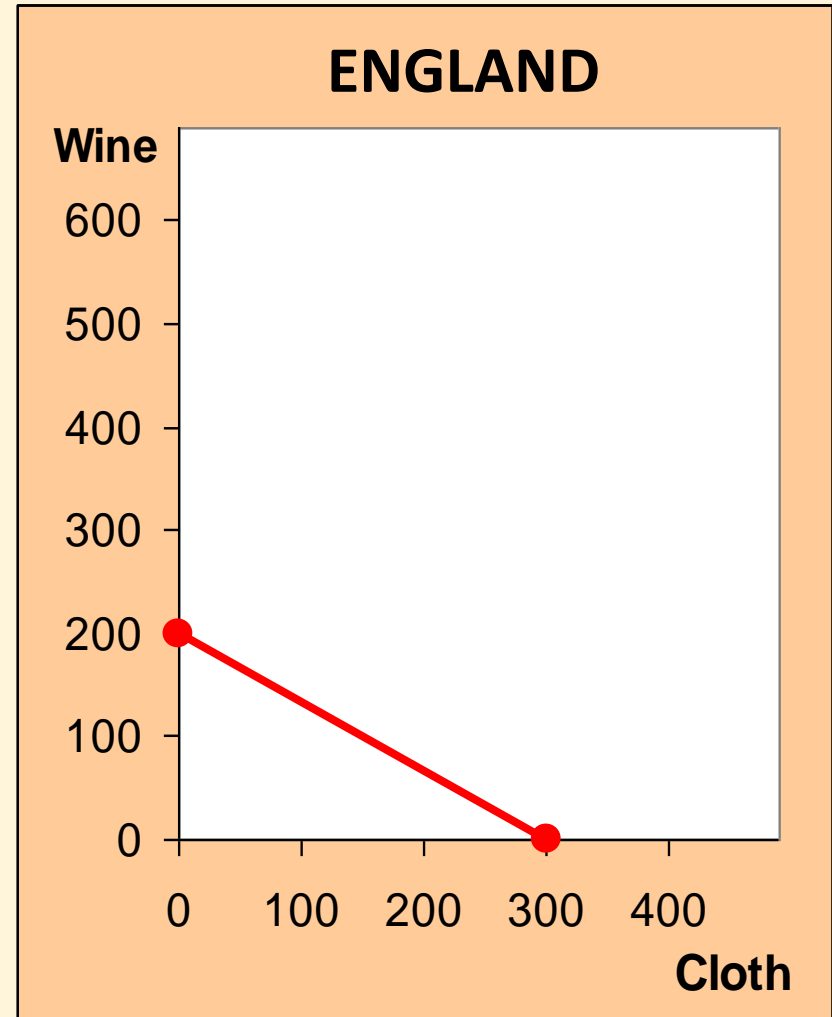
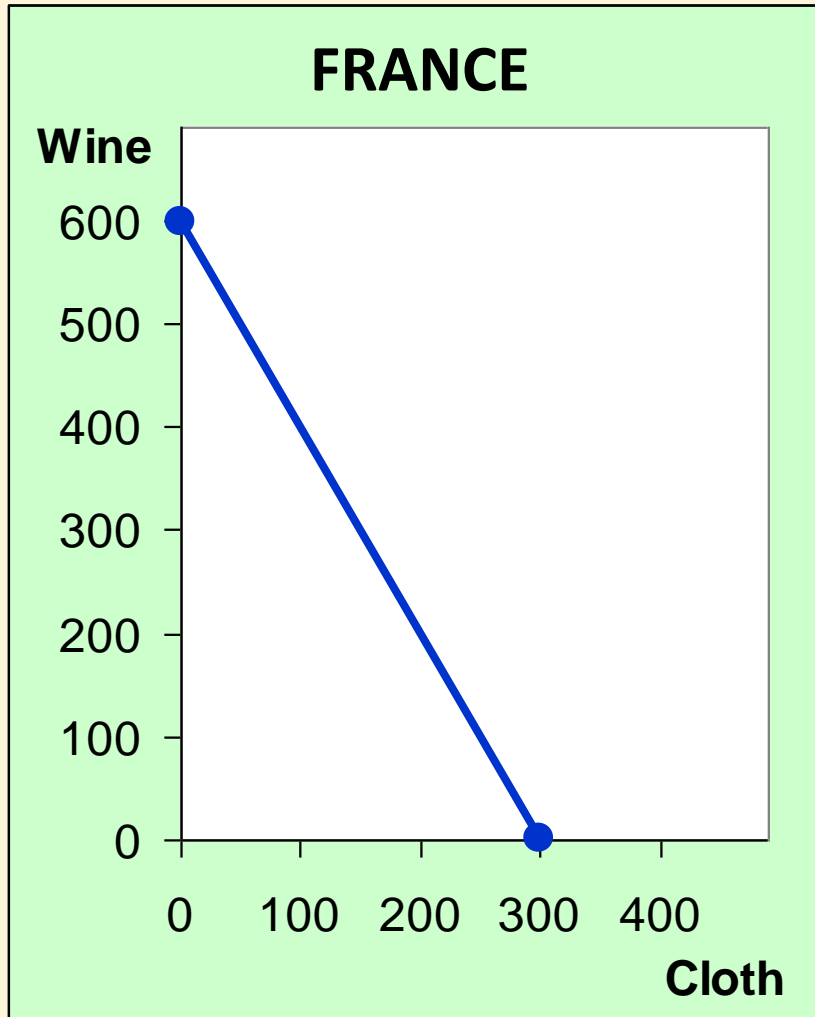
In which country is the opportunity cost of cloth lower?



# ACTIVE LEARNING 2

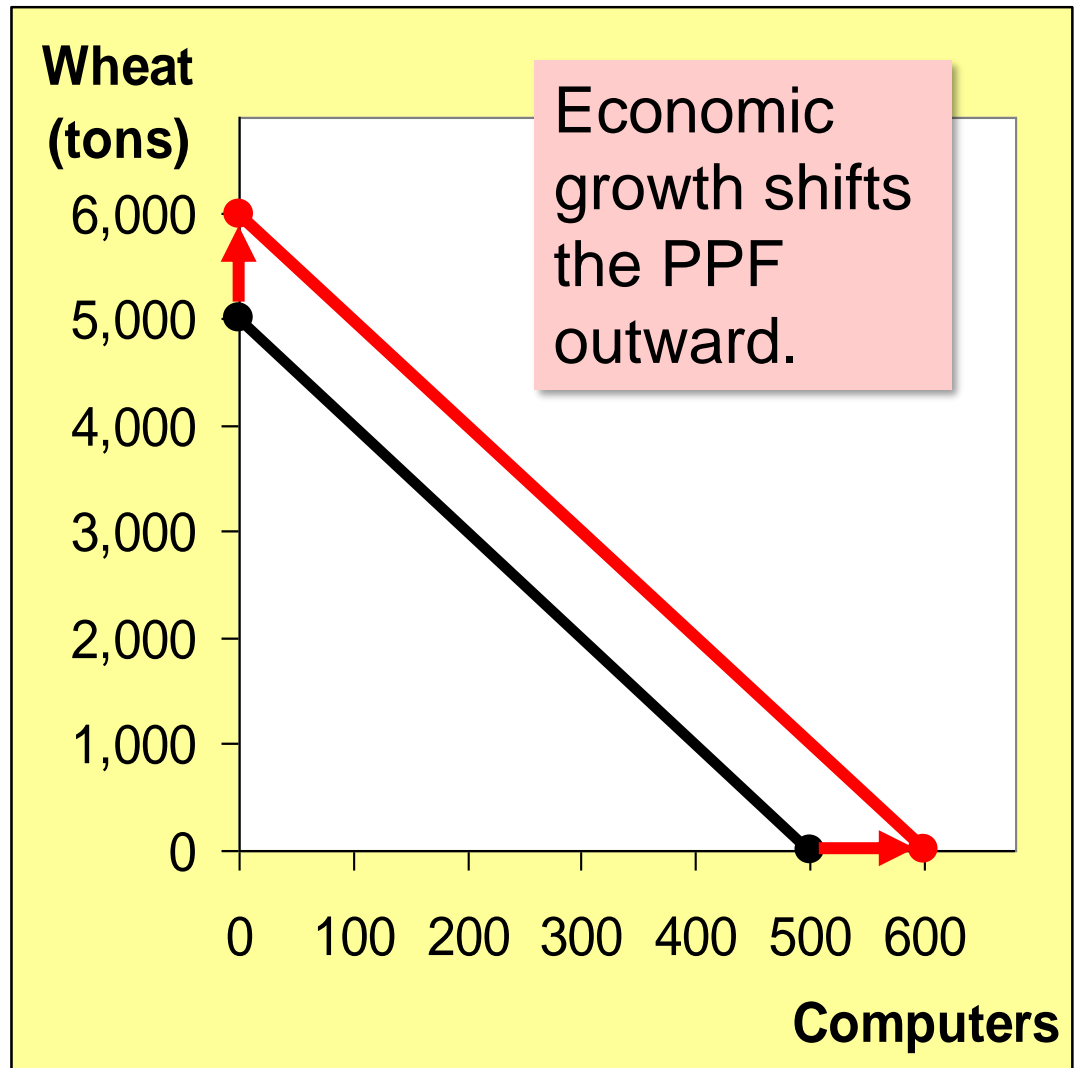
## Answers

**England**, because its PPF is not as steep as France's.



# Economic Growth and the PPF

With additional resources or an improvement in technology, the economy can produce more computers, more wheat, or any combination in between.



# The Shape of the PPF

- The PPF could be a straight line or bow-shaped.
- Depends on what happens to opportunity cost as economy shifts resources from one industry to the other.
  - If opp. cost remains constant, PPF is a straight line.

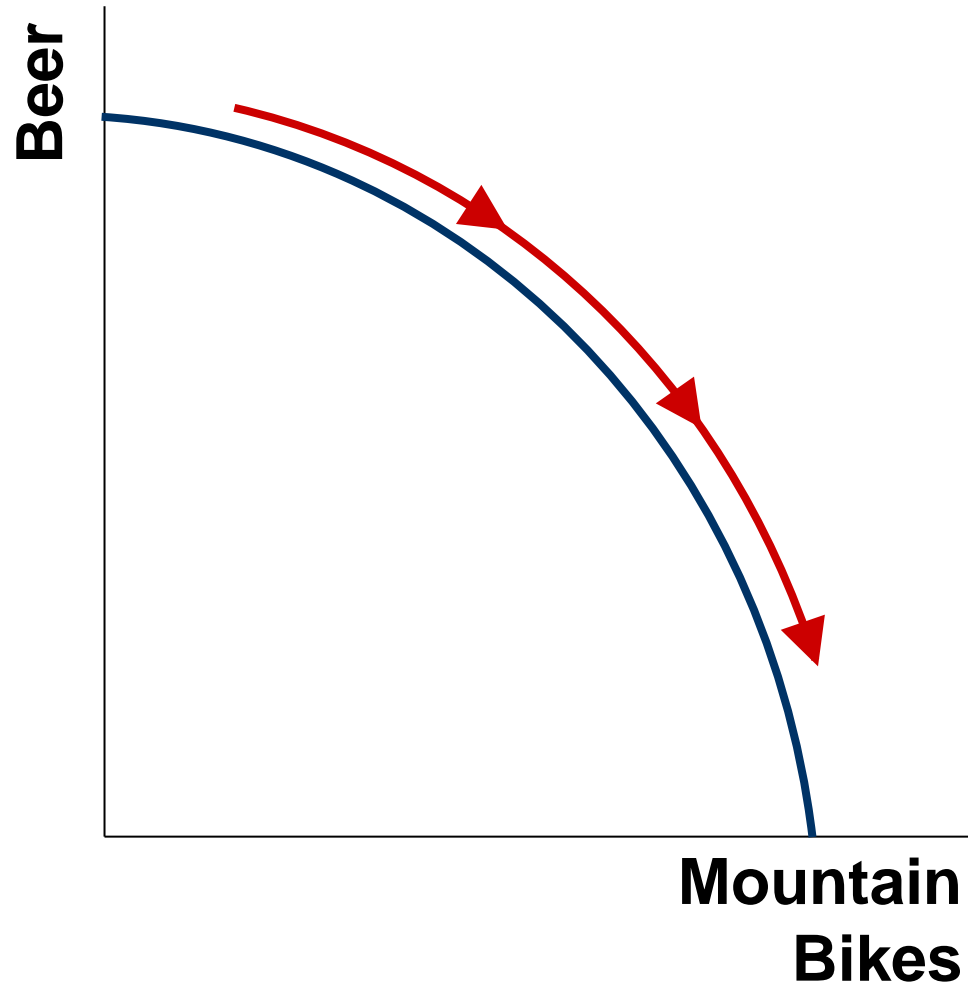
(In the previous example, opp. cost of a computer was always 10 tons of wheat.)
  - If opp. cost of a good rises as more of the good is produced, PPF is bow-shaped....



# Why the PPF Might Be Bow-Shaped

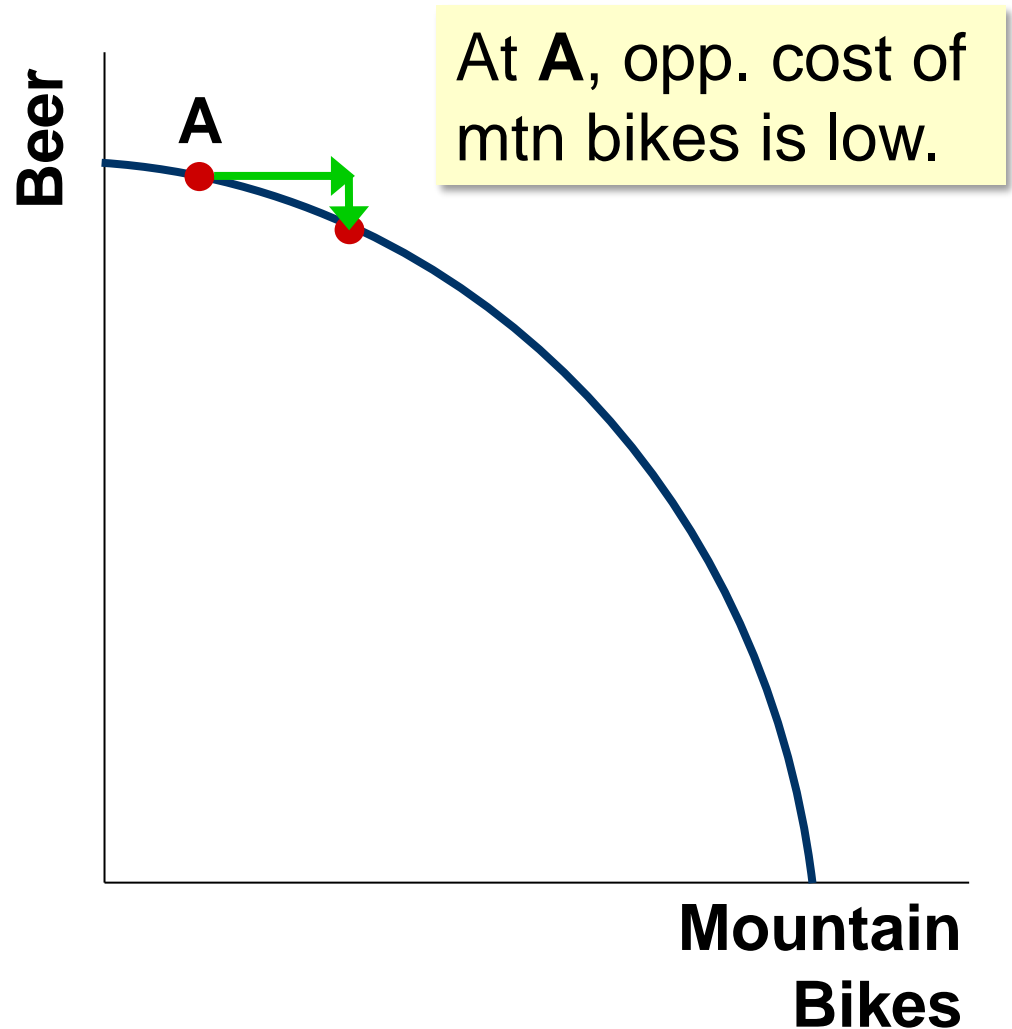
As the economy shifts resources from beer to mountain bikes:

- PPF becomes steeper
- opp. cost of mountain bikes increases



# Why the PPF Might Be Bow-Shaped

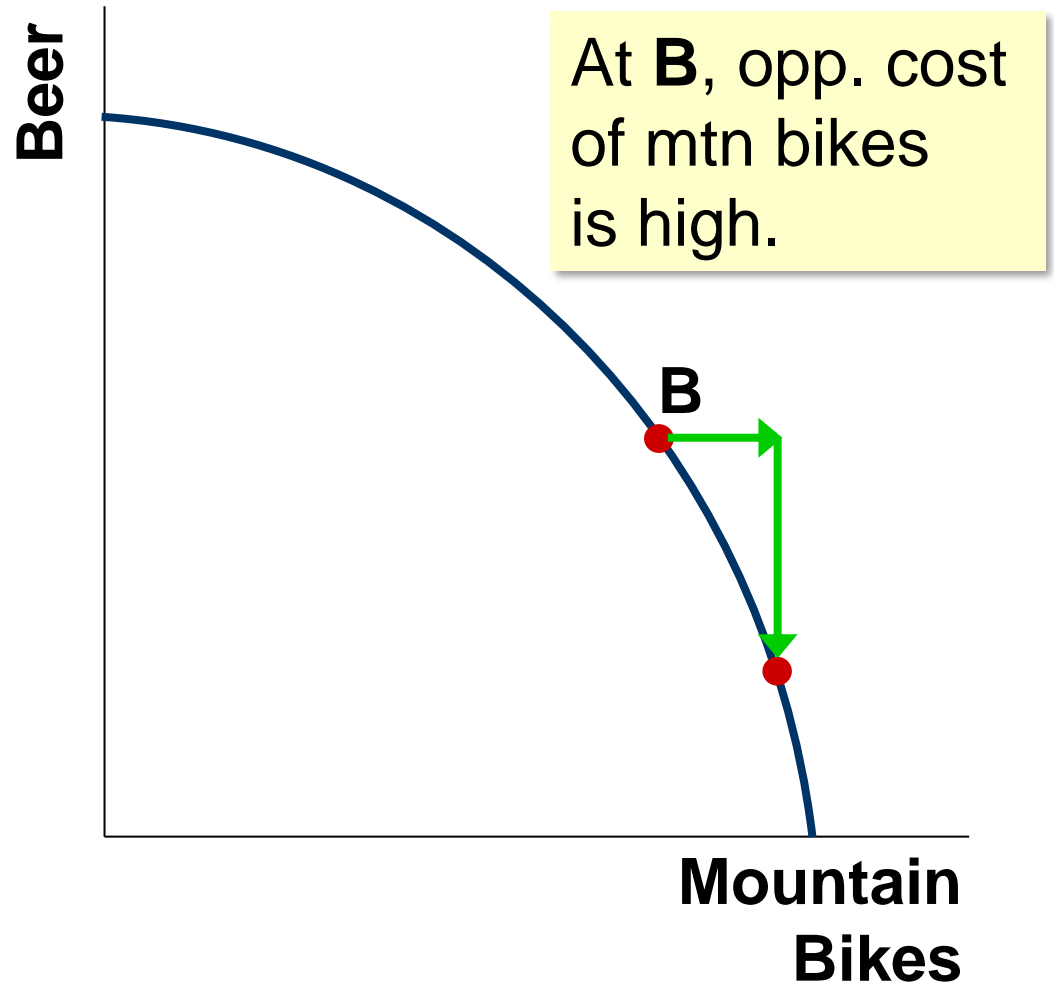
At point **A**, most workers are producing beer, even those who are better suited to building bikes. So, do not have to give up much beer to get more bikes.



# Why the PPF Might Be Bow-Shaped

At **B**, most workers are producing bikes.  
The few left in beer are the best brewers.

Producing more bikes would require shifting some of the best brewers away from beer production, causing a big drop in beer output.



## Why the PPF Might Be Bow-Shaped

- So, PPF is bow-shaped when different workers have different skills, different opportunity costs of producing one good in terms of the other.
- The PPF would also be bow-shaped when there is some other resource, or mix of resources with varying opportunity costs (E.g., different types of land suited for different uses).

# The PPF: A Summary

- The PPF shows all combinations of two goods that an economy can possibly produce, given its resources and technology.
- The PPF illustrates the concepts of tradeoff and opportunity cost, efficiency and inefficiency, unemployment, and economic growth.
- A bow-shaped PPF illustrates the concept of increasing opportunity cost.

# Microeconomics and Macroeconomics

- **Microeconomics** is the study of how households and firms make decisions and how they interact in markets.
- **Macroeconomics** is the study of economy-wide phenomena, including inflation, unemployment, and economic growth.
- These two branches of economics are closely intertwined, yet distinct—they address different questions.

# The Economist as Policy Advisor

- As scientists, economists make **positive statements**, which attempt to describe the world as it is.
- As policy advisors, economists make **normative statements**, which attempt to prescribe how the world should be.
- Positive statements can be confirmed or refuted, normative statements cannot.
- Govt employs many economists for policy advice. E.g., the U.S. President has a *Council of Economic Advisors*, which the author of this textbook chaired from 2003 to 2005.

## ACTIVE LEARNING 3

### Identifying positive vs. normative

Which of these statements are “positive” and which are “normative”? How can you tell the difference?

- a.** Prices rise when the government increases the quantity of money.
- b.** The government should print less money.
- c.** A tax cut is needed to stimulate the economy.
- d.** An increase in the price of burritos will cause an increase in consumer demand for music downloads.



## Answers

- a.** Prices rise when the government increases the quantity of money.

*Positive – describes a relationship, could use data to confirm or refute.*

- b.** The government should print less money.

*Normative – this is a value judgment, cannot be confirmed or refuted.*

# ACTIVE LEARNING 3

## Answers

- c. A tax cut is needed to stimulate the economy.

*Normative – another value judgment.*

- d. An increase in the price of burritos will cause an increase in consumer demand for music downloads.

*Positive – describes a relationship.*

*Note that a statement need not be true to be positive.*

# Why Economists Disagree

- Economists often give conflicting policy advice.
- They sometimes disagree about the validity of alternative positive theories about the world.
- They may have different values and, therefore, different normative views about what policy should try to accomplish.
- Yet, there are many propositions about which most economists agree.

## Propositions about Which Most Economists Agree (and % who agree)

- A ceiling on rents reduces the quantity and quality of housing available. (93%)
- Tariffs and import quotas usually reduce general economic welfare. (93%)
- The United States should not restrict employers from outsourcing work to foreign countries. (90%)
- The United States should eliminate agriculture subsidies. (85%)

*continued...*

## Propositions about Which Most Economists Agree (and % agreeing)

- The gap between Social Security funds and expenditures will become unsustainably large within the next fifty years if current policies remain unchanged. (85%)
- A large federal budget deficit has an adverse effect on the economy. (83%)
- A minimum wage increases unemployment among young and unskilled workers. (79%)
- Effluent taxes and marketable pollution permits represent a better approach to pollution control than imposition of pollution ceilings. (78%)

# FYI: Who Studies Economics?

- Ronald Reagan, President of the United States
- Barbara Boxer, U.S. Senator
- Sandra Day-O'Connor, Former Supreme Court Justice
- Anthony Zinni, Former General, U.S. Marine Corps
- Kofi Annan, Former Secretary General, United Nations
- Meg Witman, Chief Executive Officer, eBay
- Steve Ballmer, Chief Executive Officer, Microsoft
- Arnold Schwarzenegger, Former Gov. of California, Actor
- Ben Stein, Political Speechwriter, Actor, Game Show Host
- Mick Jagger, Singer for the Rolling Stones
- John Elway, NFL Quarterback
- Tiger Woods, Golfer
- Diane von Furstenburg, Fashion Designer

# Summary

As scientists, economists try to explain the world using models with appropriate assumptions.

Two simple models are the Circular-Flow Diagram and the Production Possibilities Frontier.

Microeconomics studies the behavior of consumers and firms, and their interactions in markets.

Macroeconomics studies the economy as a whole.

As policy advisers, economists offer advice on how to improve the world.