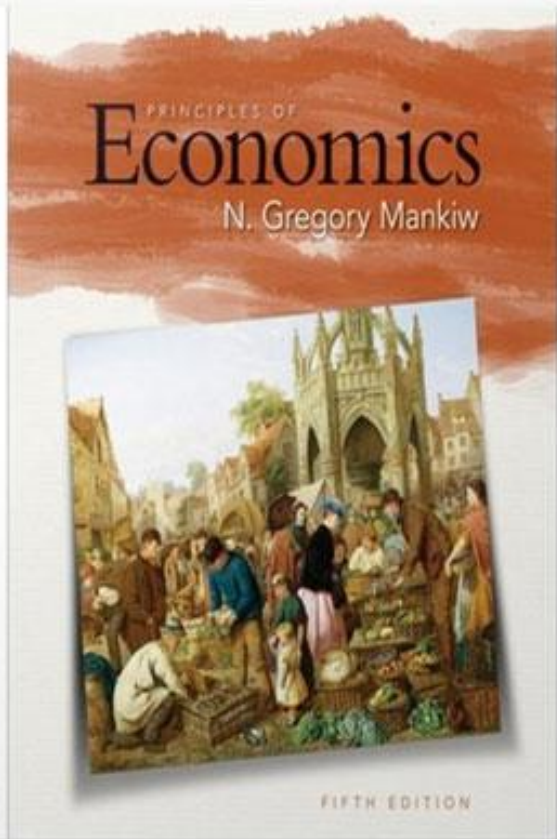
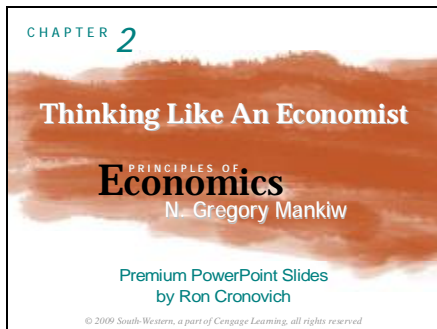


SOLUTIONS MANUAL



**PowerPoint Lecture Notes for Chapter 2:
Thinking Like An Economist**
Principles of Economics 5th edition, by N. Gregory Mankiw
Premium PowerPoint Slides by Ron Cronovich



Besides introducing students to the economic way of thinking, this chapter introduces the Production Possibilities Frontier, the first of many graphs covered in the textbook. The PPF will be used extensively in Chapter 3 (Interdependence and the Gains from Trade).

It would be helpful to ask your students to bring calculators to class on the day you cover this chapter (as well as Chapter 3).

**In this chapter,
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.

THINKING LIKE AN ECONOMIST

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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.

THINKING LIKE AN ECONOMIST

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Some Familiar Models



A road map

Some Familiar Models

A model of human anatomy from high school biology class



Some Familiar Models



A model airplane

Some Familiar Models

The model teeth at the dentist's office



**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”

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Factors of Production

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

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The “definition” of *capital* shown on this slide (“buildings and machines”) is the same that appears in the corresponding section of the chapter. A more formal definition will be provided in subsequent chapters.

FIGURE 1: The Circular-Flow Diagram

Firms

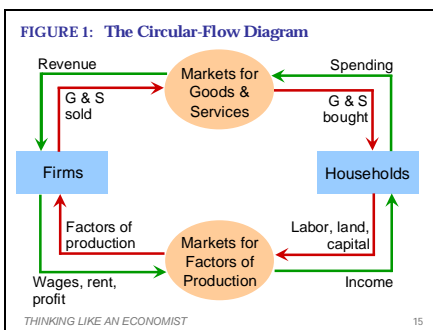
Households:
 § Own the factors of production, sell/rent them to firms for income
 § Buy and consume goods & services

Households

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

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This and the following slide build the Circular-Flow Diagram piece by piece.



In this diagram, the green arrows represent flows of income/payments. The red arrows represent flows of goods & services (including services of the factors of production in the lower half of the diagram).

To keep the graph simple, we have omitted the government, financial system, and foreign sector, as discussed on the next slide.

You may wish to change the order in which the elements appear. To do so, look for “Custom Animation” in your version of PowerPoint.

**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

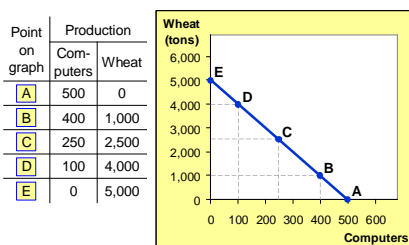
- § Producing one computer requires 100 hours labor.
- § Producing one ton of wheat requires 10 hours labor.

	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

Suggestion:

Show first row. Explain how we get the production numbers from the employment numbers. Then, show the rest of the employment numbers, and give students 3 minutes to compute the production numbers for each employment allocation.

PPF Example



**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?

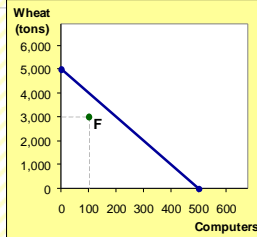
B. Next, find the point that represents (300 computers, 3500 tons of wheat), label it **G**. Would it be possible for the economy to produce this combination of the two goods?

This exercise leads students to discover for themselves that points under the PPF are possible but inefficient, while points above it are not possible.

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.

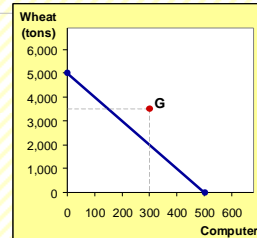


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ACTIVE LEARNING 1

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.



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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

THINKING LIKE AN ECONOMIST

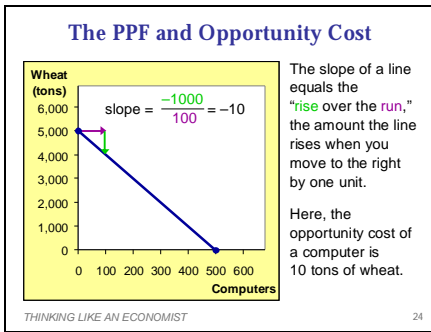
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The PPF and Opportunity Cost

- § 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.

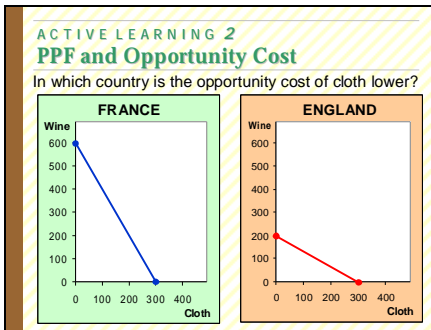
THINKING LIKE AN ECONOMIST

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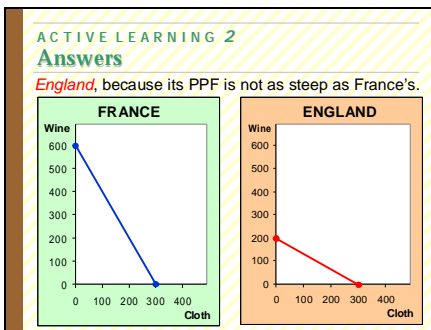


Here, the "rise" is a negative number, because, as you move to the right, the line falls (meaning wheat output is reduced).

Moving to the right involves shifting resources from the production of wheat (which causes wheat output to fall) to the production of computers (which causes computer production to rise). Producing an additional computer requires the resources that would otherwise produce 10 tons of wheat.



This exercise reinforces the material on the preceding slide. It is especially useful if you plan to cover Chapter 3 (Interdependence and the Gains from Trade) after completing Chapter 2.



There are two ways to get the answer.

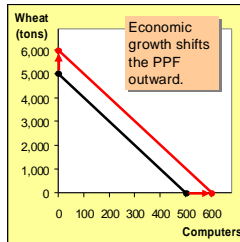
The hard way is to compute the slope of both PPFs. The slope of France's PPF equals $-600/300 = -2$, meaning that France must give up two units of wine to get an additional unit of cloth. The slope of England's PPF = $-200/300 = -2/3$, meaning that England only must sacrifice $2/3$ of a unit of wine to get an additional unit of cloth. Thus, the opportunity cost of cloth is lower in England than France.

The question, however, does not ask for the numerical values of the opportunity cost of cloth in the two countries. It only asks which country has a lower opportunity cost of cloth.

There is an easy way to determine the answer. Students must remember that the slope of the PPF equals the opportunity cost of the good measured on the horizontal axis. Then, students can simply "eyeball" the two PPFs to determine which is steepest. From the graphs show, it's pretty easy to see that England's PPF isn't as steep, and therefore the opportunity cost of cloth is lower in England than in France.

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.



THINKING LIKE AN ECONOMIST

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The PPF shows the tradeoff between the outputs of different goods at a given time, but the tradeoff can change over time.

For example, over time, the economy might get more workers (or more factories or more land). Or, a more efficient technology might be invented. Both events – an increase in the economy’s resources or an improvement in technology – cause an expansion in the set of opportunities. That is, both allow the economy to produce more of one or both goods.

This is a simple example of economic growth, an important subject that gets its own chapter in the macroeconomics portion of the textbook.

In the example shown on this slide, economic growth causes a parallel outward shift of the PPF. Since the new PPF is parallel to the old one, the tradeoff between the two goods is the same. However, this need not always be the case. For example, if a new technology had more impact on the computer industry than on the wheat industry, then the horizontal (computer) intercept would increase more than the vertical (wheat) intercept, and the PPF would become flatter: the opportunity cost of computers would fall, because the technology has made them relatively cheaper (relative to wheat). Going into more detail here is probably beyond the scope of this chapter.

The Shape of the PPF

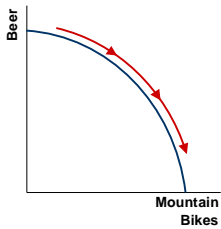
- § The PPF could be a straight line, or bow-shaped
- § Depends on what happens to opportunity cost as economy shifts resources from one industry to the other.
 - § If opp. cost remains constant, PPF is a straight line.
(In the previous example, opp. cost of a computer was always 10 tons of wheat.)
 - § If opp. cost of a good rises as the economy produces more of the good, PPF is bow-shaped.

THINKING LIKE AN ECONOMIST

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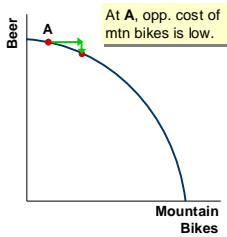
Why the PPF Might Be Bow-Shaped

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

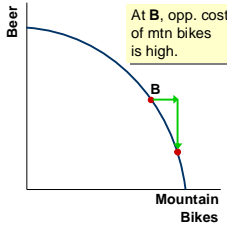
At point **A**, most workers are producing beer, even those that are better suited to building bikes. So, do not have to give up much beer to get more bikes.



Here, we are using “workers” for the more general “resources,” to keep things simple and consistent with the previous examples.

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, would cause 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 bow-shaped PPF is more realistic. However, the linear PPF is simpler to work with, and we can learn a lot about how the economy works using the linear PPF. In Chapter 3, we will use a linear PPF to show how trade can make two countries (or two individuals) better off.

Note: In the “Problems and Applications” at the end of the chapter, problem 4 asks students to construct a PPF for an economy with three different workers (Larry, Moe, and Curly), each with a different opportunity cost. The PPF ends up having three line segments (one for each worker), which--very roughly--approximates a bow-shape. After students work through and understand this problem, it should not be hard for them to understand the following: the more different kinds of workers (or, more generally, resources) there are, the closer the PPF will resemble a smooth bow shape. In an actual economy like the U.S., there are millions of different workers with different opportunity costs, so a smooth bow-shaped PPF is a nearly perfect approximation to the actual PPF.

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.

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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 video rentals.

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ACTIVE LEARNING 3 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.

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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 video rentals.
*Positive – describes a relationship.
Note that a statement need not be true to be positive.*

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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.

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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...

This slide and the next show several of the 14 propositions appearing in Table 1 of the chapter. For the full list, see Table 1 in the chapter.

Note: Some of the terms appearing in these statements have not yet been defined, so you may wish to define them to students as they appear on the screen.

If you're pressed for time, delete the following slide and refer your students to Table 1 in the chapter.

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%)

...Continued from previous slide.

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 Whitman, Chief Executive Officer, eBay
- § Steve Ballmer, Chief Executive Officer, Microsoft
- § Arnold Schwarzenegger, Governor 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

This FYI lists people who studied economics in college. It is a fun way to lighten up the lecture. On the other hand, if you're running short on time, this is a good candidate to skip – students will readily find it when they read the chapter.

(Due to space limitations, this slide omits a few of the names in the corresponding FYI box in the text.)

CHAPTER 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.