

## Chapter 2 Production Possibilities Frontier Framework



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## In this Lecture

- An Economy's Production Possibilities Frontier
- Increasing and Constant Opportunity Costs
- The Production Possibilities Frontier and Various Economic Concepts
- Specialization, Trade and the PPF



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## Production Possibilities Frontier

Represents the possible combinations of two goods that can be produced in a certain period of time under the conditions of a given state of technology and fully employed resources.

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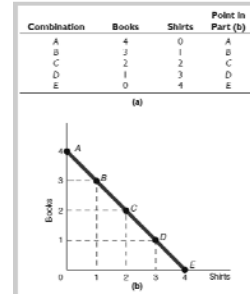


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## Production Possibilities Frontier Constant Opportunity Costs

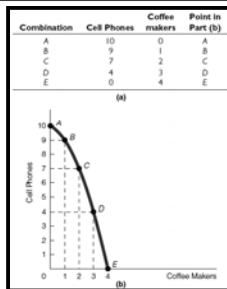
- The economy can produce any of the five combinations of books and shirts in part (a).
- We have plotted these combinations in part (b). The production possibilities frontier (PPF) in part (b) is a straight line because the opportunity cost of producing either good is constant.



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## Production Possibilities Frontier Increasing Opportunity Costs



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- The economy can produce any of the five combinations of cell phones and coffee makers in part (a).
- We have plotted these combinations in part (b).
- The production possibilities frontier in part (b) is bowed outward because the opportunity cost of producing coffee makers increases as more coffee makers are produced.

## Law of Increasing Opportunity Costs

As more of a good is produced, the **opportunity costs** of producing that good increase



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### Increasing Opportunity Costs

**We start with the assumption that not all people can build houses at the same opportunity cost.**

**When houses are first built, only the people who can build them at (relatively) low opportunity costs will build them.**

**As increasingly more houses are built, people with higher opportunity costs of building houses will start building houses.**

**This is the same as saying that as more houses are built, the opportunity cost of building houses increases.**

**And this is why the PPF for houses and good X is bowed outward (concave downward). See diagram at left.**

**Notice that when we go from building 60 to 70 houses (10 more houses), we build 5 units of good X, but when we go from building 110 to 120 houses (again, 10 more houses), we build 20 units of good X.**

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### Production Possibility Frontier Framework for Understanding

PPF can be used to illustrate 7 economic concepts

- Scarcity
- Choice
- Opportunity Cost
- Productive Efficiency
- Productive Inefficiency
- Unemployment
- Economic Growth

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### Productive Efficiency and Inefficiency

**Productive Efficiency**  
The condition where the maximum output is produced with given resources and technology

**Productive Inefficiency**  
The condition where less than the maximum output is produced with given resources and technology. Productive inefficiency implies that more of one good can be produced without any less of another good being produced.

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### Attainable and Unattainable Regions and Productive Efficiency

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### The PPF and Various Economic Concepts I

(1) **Scarcity** is illustrated by the frontier itself. Implicit in the concept of scarcity is the idea that we can have some things but not all things. The PPF separates an attainable region from an unattainable region.

(2) **Choice** is represented by our having to decide among the many attainable combinations of the two goods. For example, will we choose the combination of goods represented by point A or by point B?

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### The PPF and various Economic Concepts II

(3) **Opportunity cost** is most easily seen as movement from one point to another, such as movement from point A to point B. *More cars are available at point B than at point A, but fewer television sets are available.* In short, the opportunity cost of more cars is fewer television sets.

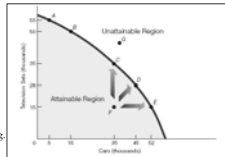
(4) **Productive efficiency** is represented by the points on the PPF (such as AE), while productive inefficiency is represented by any point below the PPF (such as F).

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## The PPF and various Economic Concepts III

(5) **Unemployment** (in terms of resources being unemployed) exists at any productive inefficient point (such as *F*), whereas resources are fully employed at any productive efficient point (such as *AE*).



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## Economic Growth within a PPF Framework

An increase in resources or an advance in technology can increase the production capabilities of an economy, leading to economic growth and shift outward in the production possibilities frontier.

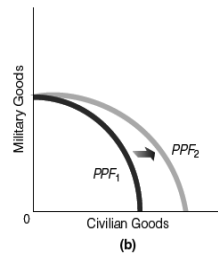


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## Economic Growth within a PPF Framework

If the advance in technology leads to the greater production of only one good (such as civilian goods in our exhibit), then the PPF shifts outward, as shown in (b).



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## Advance in Technology

An advance in technology commonly refers to the ability to produce more output with a fixed amount of resources or the ability to produce the same output with fewer resources.



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## Self Test

**1. What does a straight-line production possibilities frontier (PPF) represent? What does a bowed-outward PPF represent?**

A straight-line PPF represents constant opportunity costs between two goods. For example, for every unit of *X* produced, one unit of *Y* is forfeited. A bowed-outward PPF represents increasing opportunity costs. For example, we may have to forfeit one unit of *X* to produce the eleventh unit of *Y*, but we have to forfeit two units of *X* to produce the one hundredth unit of *Y*.

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## Self Test

**2. What does the law of increasing costs have to do with a bowed-outward PPF?**

A bowed-outward PPF is representative of increasing costs. In short, the PPF would not be bowed outward if increasing costs did not exist.

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## Self Test

3. A politician says, "If you elect me, we can get more of everything we want." Under what condition(s) is the politician telling the truth?

The first condition is that the economy is currently operating *below* its PPF. It is possible to move from a point below the PPF to a point on the PPF and get more of all goods. The second condition is that the economy's PPF shifts outward.

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## Self Test

4. In an economy, only one combination of goods is productive efficient. True or false? Explain your answer.

False. There are numerous productive efficient points, all of which lie on the PPF.

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## Exchange or Trade

### Comparative Advantage

The situation where someone can produce a good at lower **opportunity cost** than someone else can.

### Specialization

Producing goods in which you have a **comparative advantage**

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## A Timeline for Trade

**Ex Ante** - Phrase that means "before," as in before a trade.

**Ex Post** - Phrase that means "after," as in after a trade.



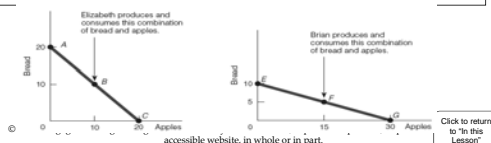
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## Ex Ante

### Elizabeth and Brian Before the Trade

	Elizabeth		Brian	
	Bread	Apples	Bread	Apples
Elizabeth	20	0	10	0
Brian	10	10	5	15
	0	20	0	30

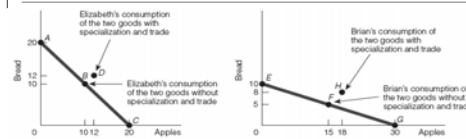


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## Ex Post

	No Specialization and No Trade	Specialization and Trade	Gains from Specialization and Trade
Elizabeth			
Consumption of Loaves of Bread	10	12	+2
Consumption of Apples	10	12	+2
Brian			
Consumption of Loaves of Bread	5	8	+3
Consumption of Apples	15	18	+3



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## Wall Street Journal

The Wall Street Journal is a rich source of information which provides real life examples of micro- and macro economic activities. Check today's issue to see the most current news.

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