

## Scarcity, Opportunity Cost, and Production Possibilities Curves

The primary economic problem facing all individuals, families, businesses, and nations is the scarcity of resources: There simply are not enough resources to satisfy the unlimited wants for goods and services. Scarcity necessitates choice. Consuming or producing more of one thing means consuming or producing less of something else. The opportunity cost of using scarce resources for one thing instead of something else is often represented in graphical form as a *production possibilities curve* (PPC). A nation's PPC shows how many units of two goods or services the nation can produce in one year if it uses its resources fully and efficiently. This activity uses the PPC to illustrate how scarcity requires choices and the opportunity cost of those choices.

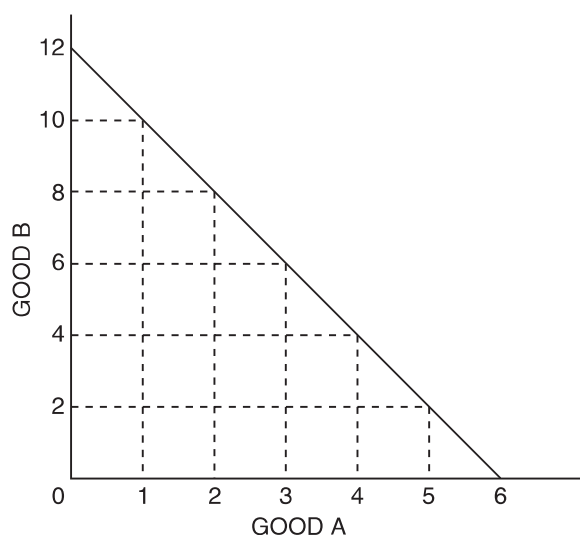
### Part A: Basic Production Possibilities Curves

Figure 1-2.1 shows a basic PPC for the production of Goods A and B. Use Figure 1-2.1 to answer the questions that follow.



Figure 1-2.1

#### A Linear Production Possibilities Curve



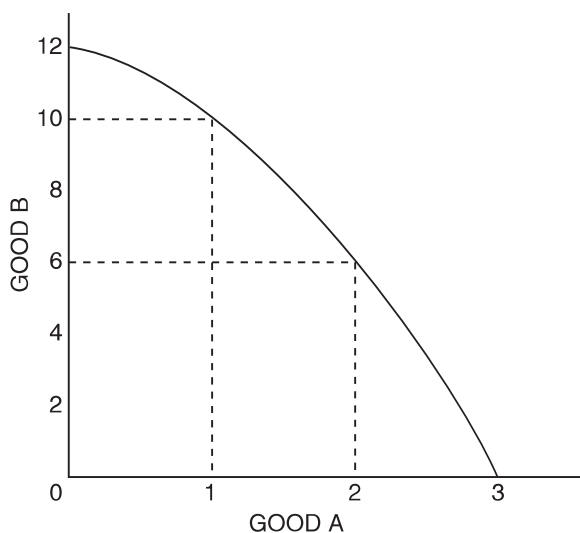
1. Assume the economy represented by Figure 1-2.1 is presently producing 12 units of Good B and 0 units of Good A:
  - (A) The opportunity cost of increasing production of Good A from 0 units to 1 unit is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (B) The opportunity cost of increasing production of Good A from 1 unit to 2 units is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (C) The opportunity cost of increasing production of Good A from 2 units to 3 units is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (D) This is an example of (*constant / increasing / decreasing / zero*) opportunity cost per unit for Good A.

Figure 1-2.2 contains a typical PPC often used by economists. This PPC is concave to the origin; it gets steeper as the country moves out along its horizontal axis. Use Figure 1-2.2 to answer the questions that follow.



Figure 1-2.2

**A Concave Production Possibilities Curve**



2. If the economy represented in Figure 1-2.2 is presently producing 12 units of Good B and 0 units of Good A:
- (A) The opportunity cost of increasing production of Good A from 0 units to 1 unit is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (B) The opportunity cost of increasing production of Good A from 1 unit to 2 units is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (C) The opportunity cost of increasing production of Good A from 2 units to 3 units is the loss of \_\_\_\_\_ unit(s) of Good B.
  - (D) This is an example of (*constant / increasing / decreasing / zero*) opportunity cost per unit for Good A.

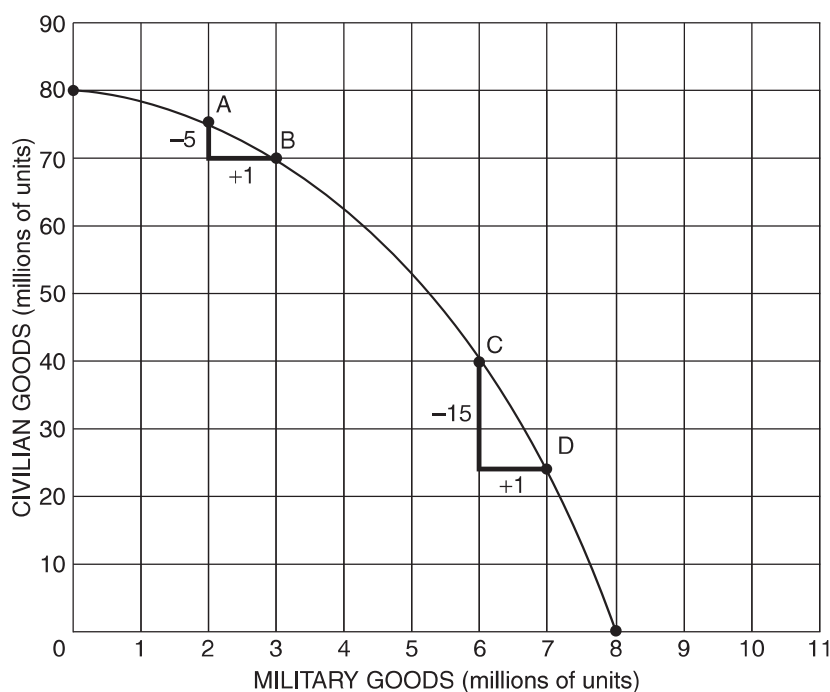
### Part B: Understanding the Shape of a Concave PPC

The “law of increasing opportunity cost” explains why the typical PPC is concave to the origin (bowed outward). Figure 1-2.3 shows the PPC for the country of Costica. The country currently operates at point A and produces 75 million units of civilian goods and 2 million units of military goods. If the country decides to increase its military provision to 3 million units, it must give up only 5 million units in civilian goods because certain factories are easily converted from civilian production to military production. However, if Costica decides it must continue to increase its military production, the opportunity cost of doing so increases because now it is more difficult to convert other factories to military production. Resources are not equally well suited to the production of all goods. The opportunity cost of increasing military output from 6 million units to 7 million units (point C to point D) has increased to 15 million units in civilian goods. This increasing opportunity cost is reflected in the steeper slope of the PPC as the country produces more military goods and fewer civilian goods.



Figure 1-2.3

#### Showing the Law of Increasing Opportunity Cost



**Part C: Drawing Various PPCs**

Use the following axes to draw the type of curve that illustrates the label above each graph.



Figure 1-2.4

**Production Possibilities Curve 1:  
Increasing Opportunity Cost per Unit  
of Good B**

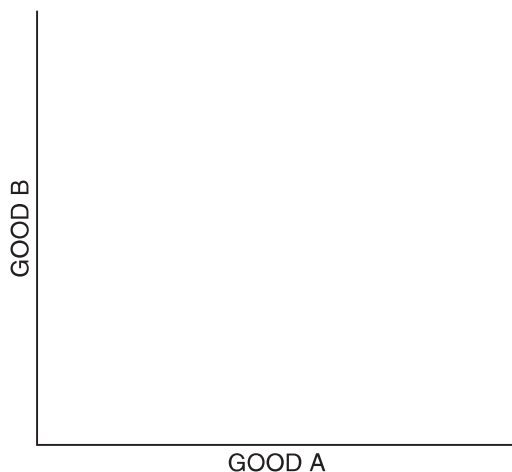


Figure 1-2.5

**Production Possibilities Curve 2:  
Zero Opportunity Cost per Unit of  
Good B**

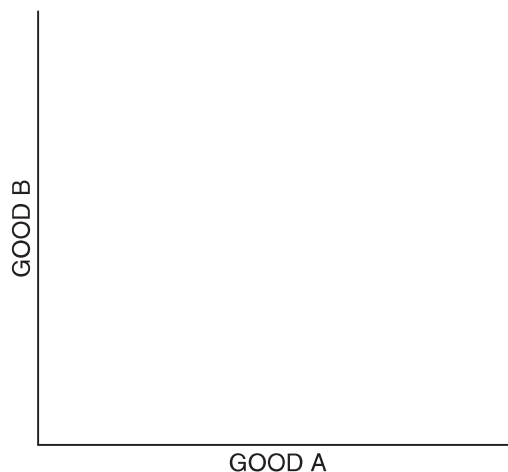
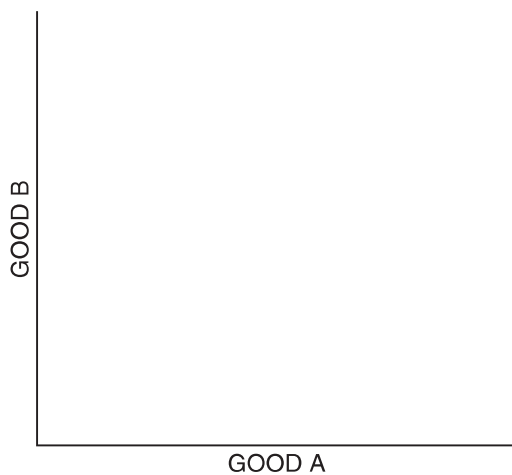


Figure 1-2.6

**Production Possibilities Curve 3:  
Constant Opportunity Cost per Unit  
of Good B**

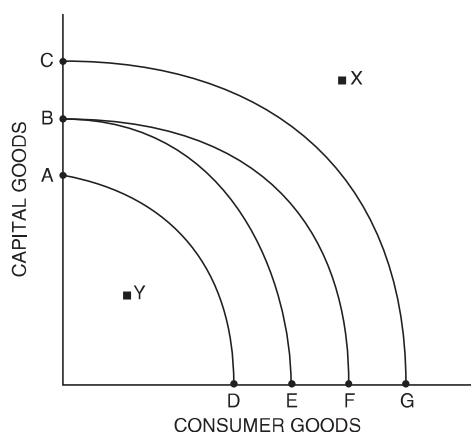


**Part D: Economic Growth**

Over time, most countries see an increase in their ability to produce goods and services. This “economic growth” is shown as an outward shift of the PPC and results from a variety of factors, including improved technology, better education, and the discovery of new resources. Use Figure 1-2.7 to answer the next five questions. Each question starts with Curve BE as a country’s PPC.



Figure 1-2.7

**Production Possibilities Curve: Capital Goods and Consumer Goods**

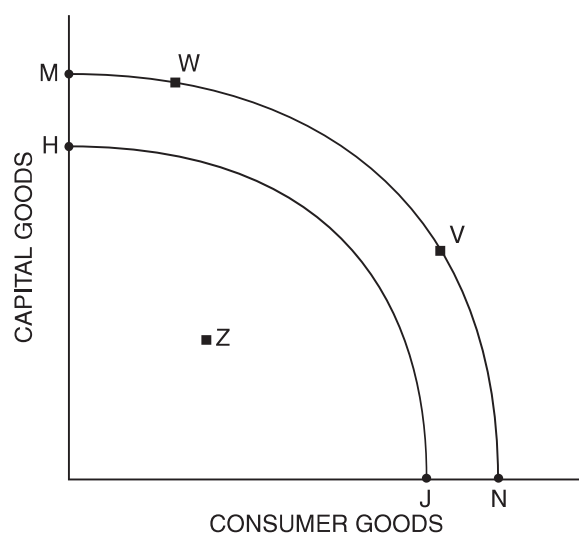
3. Suppose there is a major technological breakthrough in the consumer-goods industry, and the new technology is widely adopted. Which curve in the diagram would represent the new PPC? (Indicate the curve you choose with two letters.) \_\_\_\_\_
4. Suppose a new government comes into power and forbids the use of automated machinery and modern production techniques in all industries. Which curve in the diagram would represent the new PPC? (Indicate the curve you choose with two letters.) \_\_\_\_\_
5. Suppose massive new sources of oil and coal are found within the economy, and there are major technological innovations in both industries. Which curve in the diagram would represent the new PPC? (Indicate the curve you choose with two letters.) \_\_\_\_\_
6. If BE represents a country’s current PPC, what can you say about a point like X? (Write a brief statement.) \_\_\_\_\_
7. If BE represents a country’s current PPC, what can you say about a point like Y? (Write a brief statement.) \_\_\_\_\_

Use Figure 1-2.8 to answer the next three questions.



Figure 1-2.8

**Production Possibilities Curve: Economic Growth**



8. What change could cause the PPC to shift from the original curve (HJ) to the new curve (MN)?
9. Under what conditions might an economy be operating at Point Z?
10. Why might a government implement a policy to move the economy from Point V to Point W?