

Introduction to Economics

Lecture 1

MGM112

The Economic Problem

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Chapter
01

Objectives of Lecture (1)

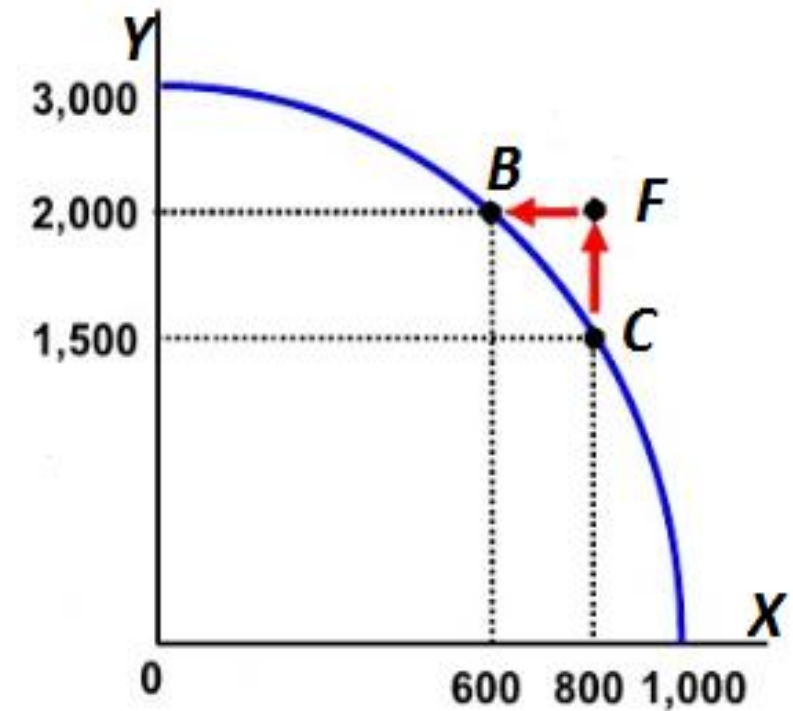
After studying this lecture, you will be able to:

- Define the Production Possibility frontier (PPF) and use it to calculate Opportunity cost
- Explain How the production possibilities frontier (PPF) illustrates production efficiency, and Scarcity
- Show How economic growth influences the Production Possibility frontier (PPF)

Chapter
01

Definition of Production Possibility frontier (PPF).

It is a graphical model that represents **all the different combinations of goods and services that can be produced and those that cannot given resources and the current state of technology.**

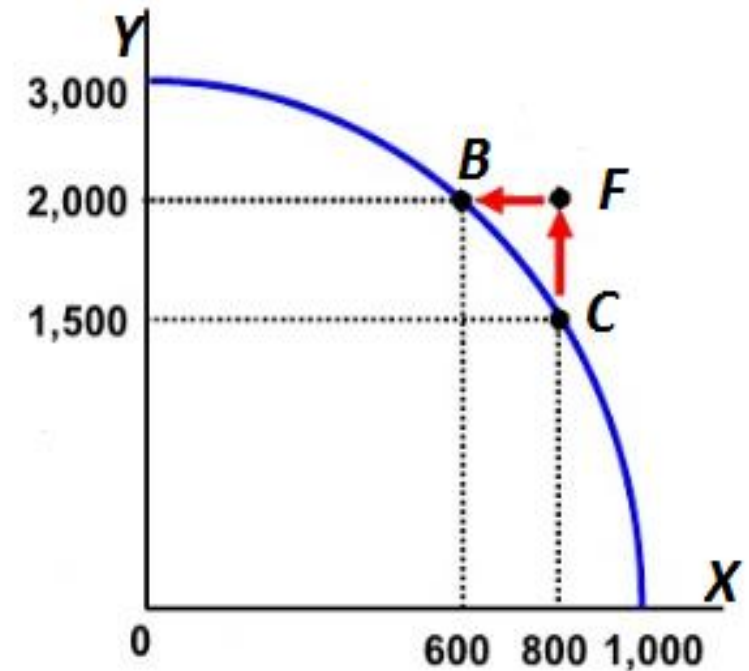


Chapter
01

Definition of Production Possibility frontier (PPF).

Under assumptions as :

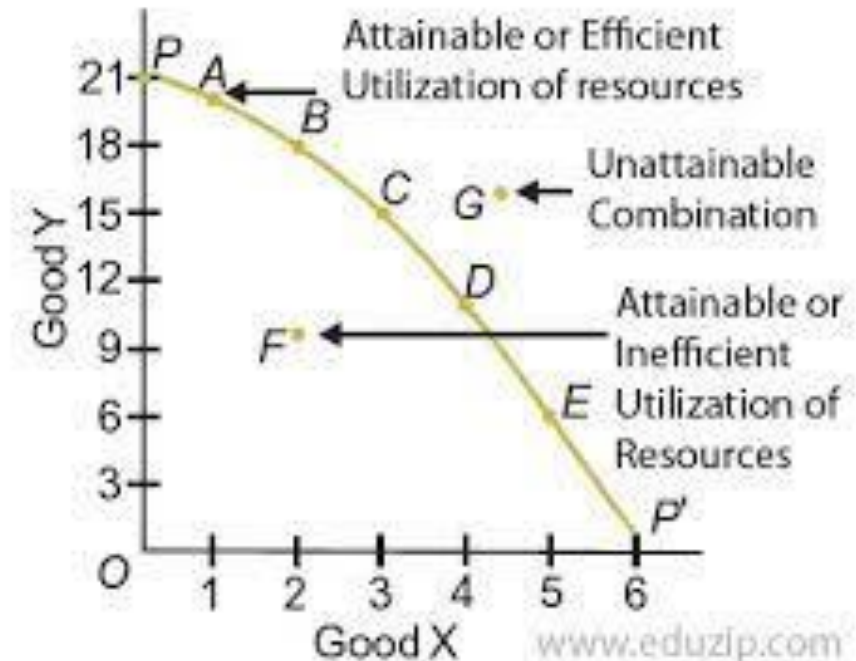
- O Only Two goods
- O Fixed resources
- O Fixed technology
- O At given moment / Time
- O Efficiency - the economy is achieving maximum production by utilizing scarce resources to the fullest.



Chapter
01

Definition of Production Possibility frontier (PPF).

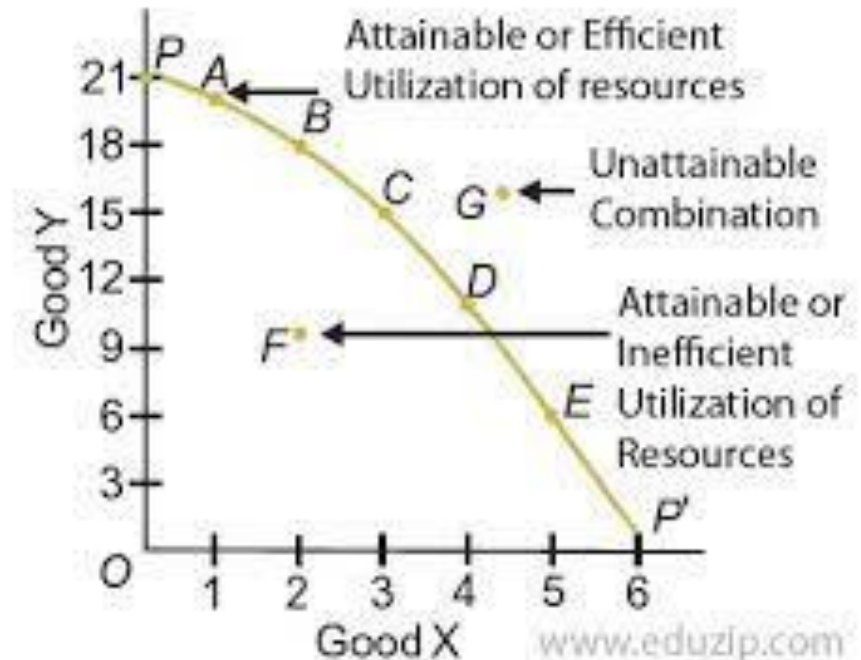
- Points **on/ Along** the PPF (A, B, C, D, E): **Efficient, Attainable**
 - Efficient:** full employment of resources
 - The production possibilities frontier shows the combination of goods and services that can be produced efficiently
 - Attainable:** Can be produced by the current available resources
 - The production possibilities frontier shows the maximum levels of production that can be attained.



Chapter
01

Definition of Production Possibility frontier (PPF).

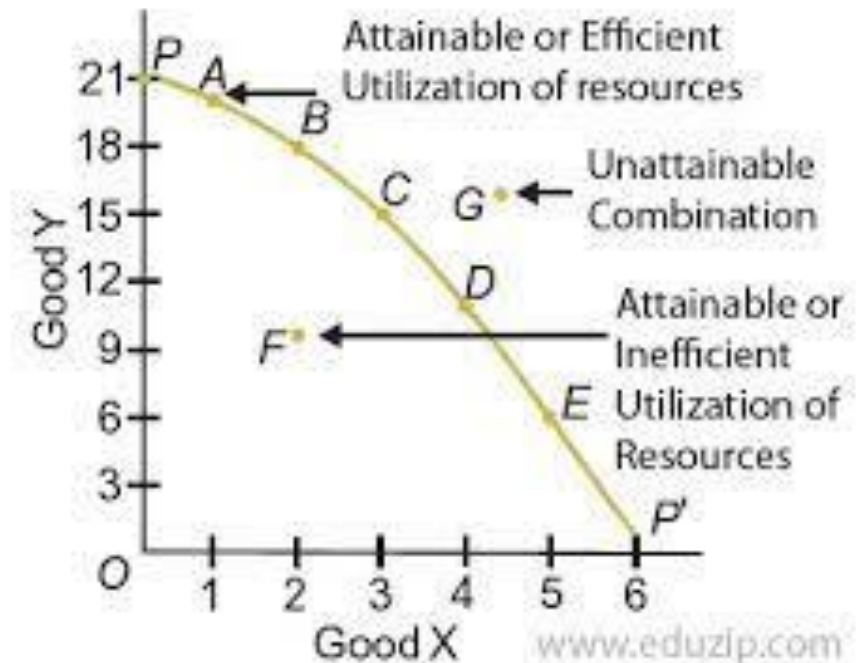
- Points **inside** the PPF (F): **Inefficient, Attainable**
 - Inefficient:** Underemployment of resources
- Attainable:** Can be produced by the current available resources



Chapter
01

Definition of Production Possibility frontier (PPF).

- Points **Outside/ Beyond** the PPF (G): **Unattainable** (Can not be produced by the current available resources)
- Unattainable:** Can not be produced by the current available resources

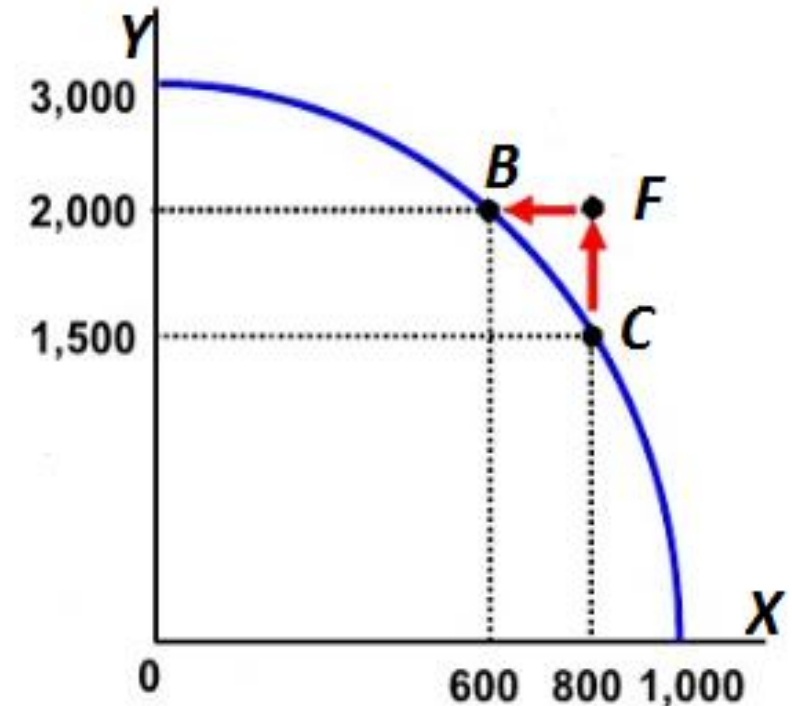


Chapter
01

Definition of Production Possibility frontier (PPF).

The PPC can be used to illustrate the concepts of:

1. Scarcity,
2. Efficiency, Inefficiency,
3. Opportunity cost,
4. Economic growth.



Chapter
01

1) the PPF& scarcity

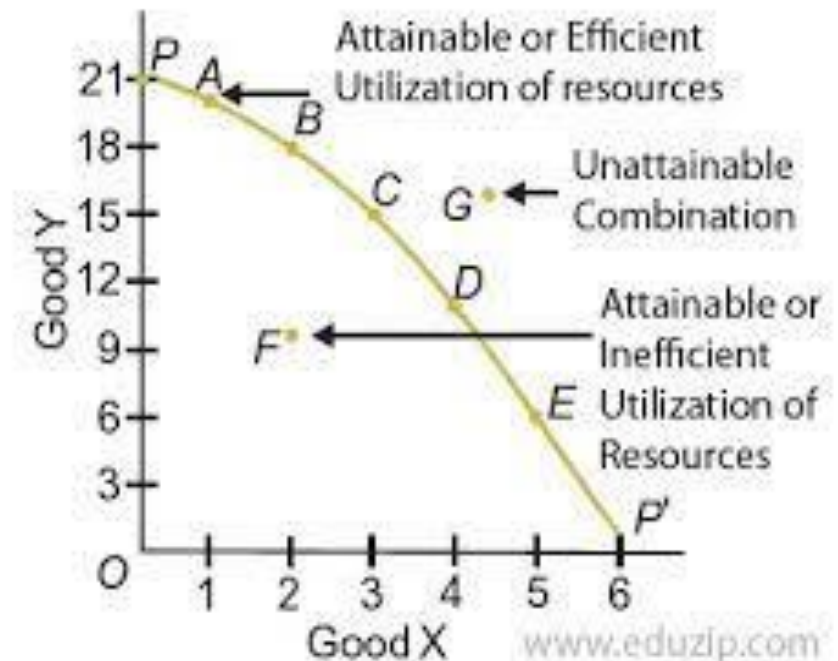
(Attainable , Unattainable)
Inside / Along / Outside

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1) the PPF& scarcity

(attainable , unattainable)

- All points Outside/ Beyond PPF as point **(G)** are unattainable and illustrate the concept of scarcity.
 - Because there simply are not enough resources to produce any of these combinations of outputs

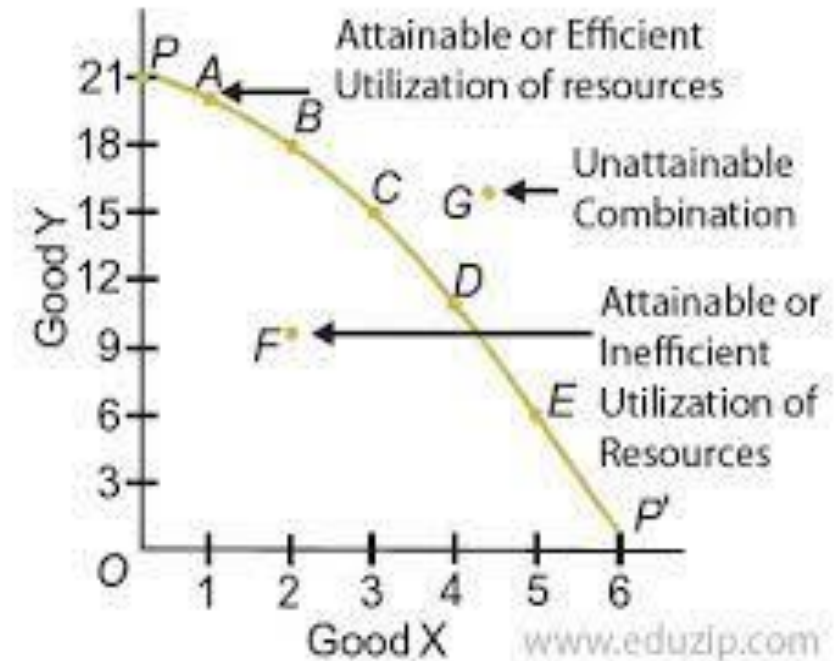


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1) the PPF& scarcity

(attainable , unattainable)

- All points On PPF as points (A, B, C, D, E) or Inside PPF as point (D) are attainable and illustrate the concept of scarcity.
 - Because while moving along/On the PPF to increase the production of one good requires that the production of another good be reduced (Trade-Off) , which also illustrates scarcity

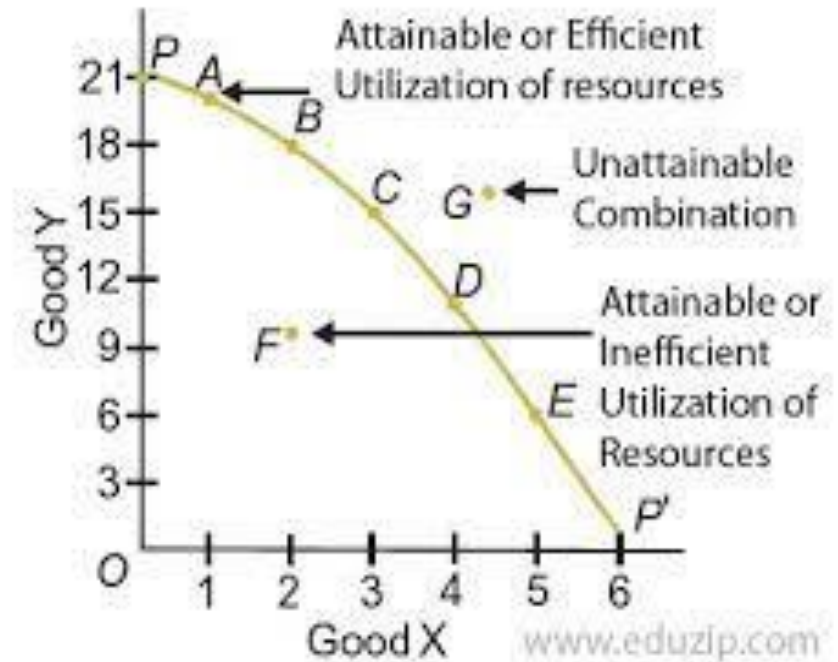


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01

1) the PPF& scarcity

(attainable , unattainable)

- i.e., while moving along/On the PPF from point B to C , this will lead to increase the production of good (X) and this requires the production of good(Y) be reduced, which also illustrates scarcity



Chapter
01

2) the PPF& Efficiency

(Efficient, Inefficient)
Along / Inside

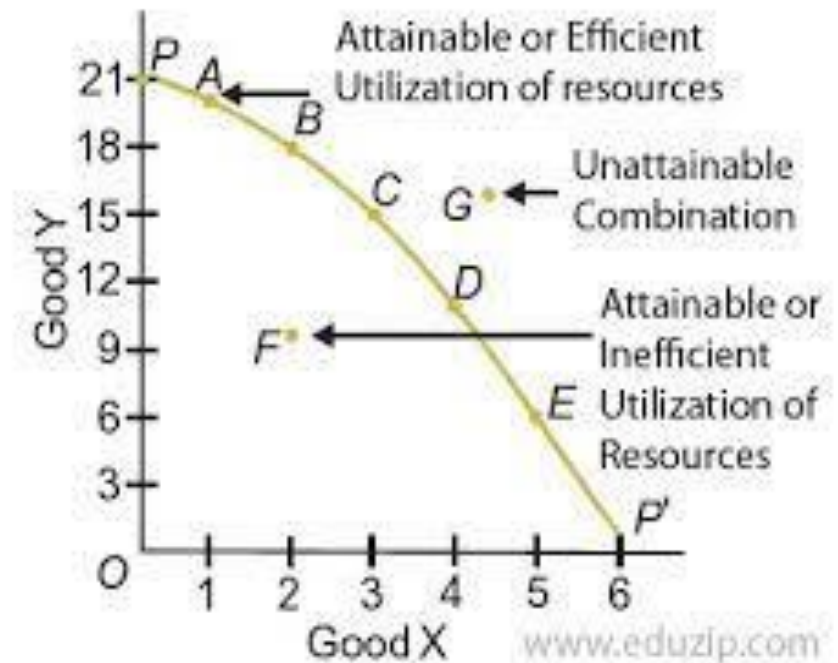
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2) the PPF& Efficiency

(Efficient, Inefficient)

- **Efficiency:**

- means the full employment of resources in production; all resources are fully utilized



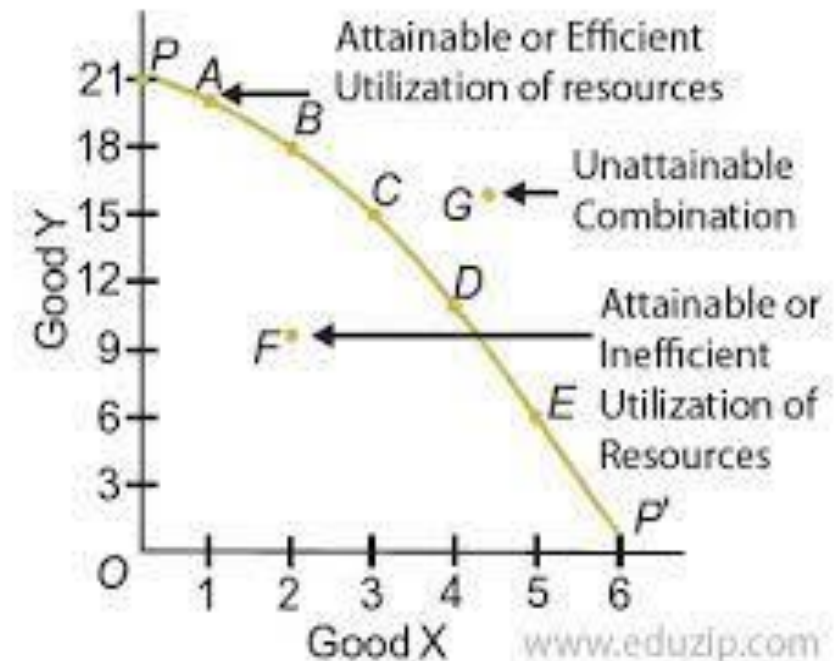
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2) the PPF& Efficiency

(Efficient, Inefficient)

- Efficiency:

- Efficient combinations of output will always be on the PPF as points (A, B, C, D, E)
 - Movements along the PPF illustrate that producing more of one good requires producing less of other good. This observation reflects the result that a tradeoff must be made when producing output efficiently



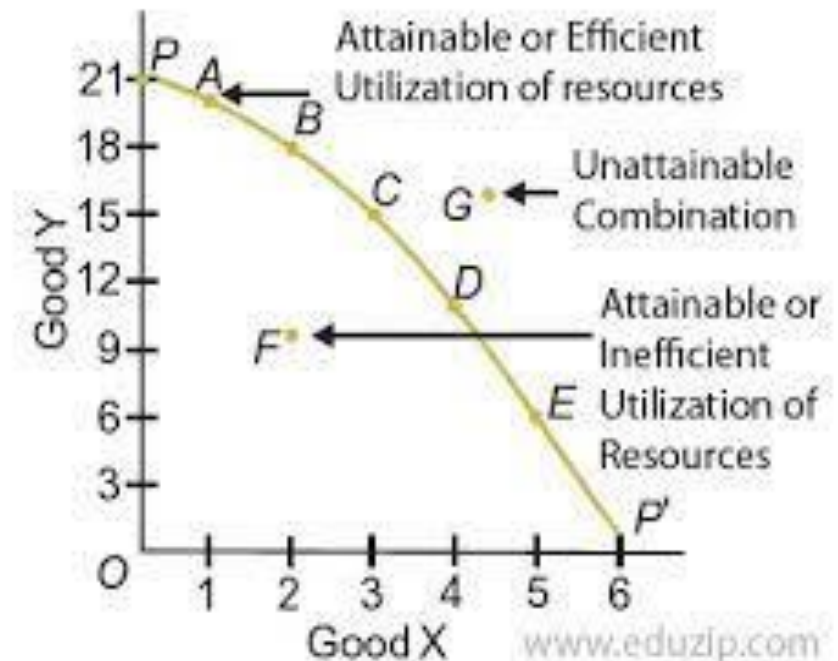
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01

2) the PPF& Efficiency

(Efficient, Inefficient)

- **Inefficiency:**

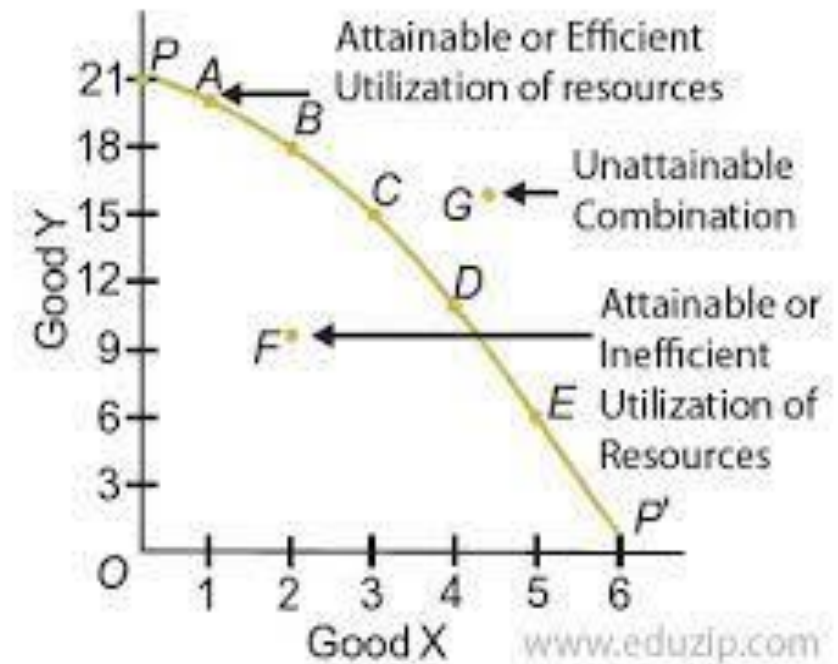
- means the **Underemployment of resources** in production; **all resources are not fully utilized**
 - i.e., one or both outputs may be increased without decreasing the other output level.
- **Inefficient combinations** of output will always be **inside** the PPF as point **(F)**



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3) the PPF& opportunity cost

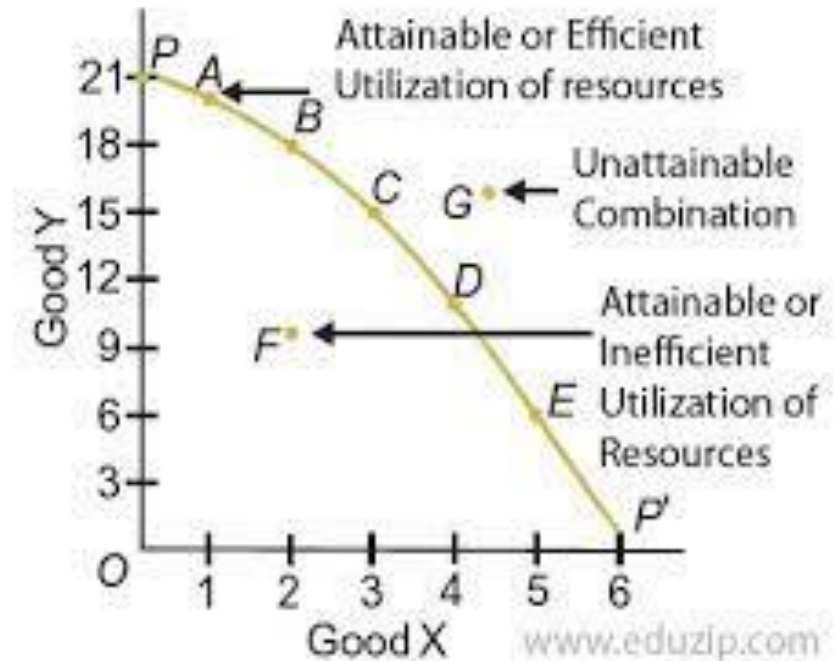
Opportunity cost: The units you give up/ sacrifice of one good to get extra units of the other good



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01

3) the PPF& opportunity cost

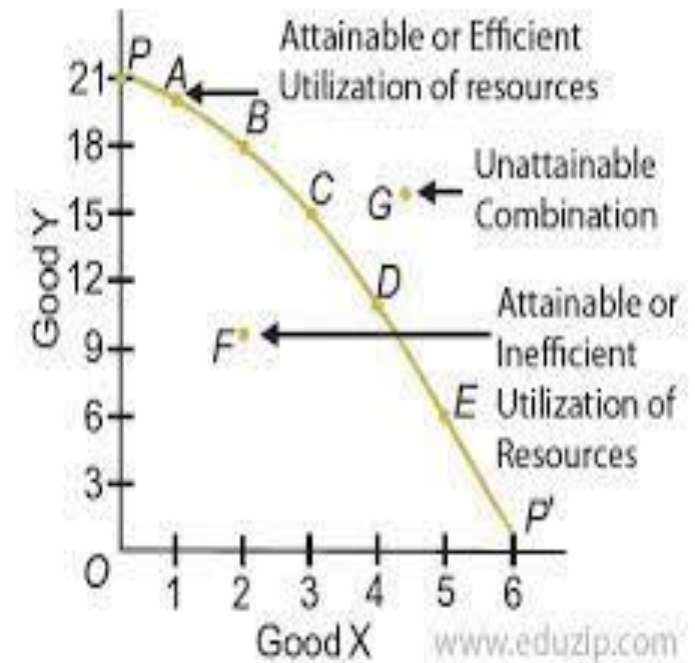
- **The negative slope of PPF illustrates the concept of opportunity cost (the marginal rate of transformation (MRT)),**
 - Which implies that whenever moving along PPF to increase the production of one good, we must decrease the production of the other good. (**Trade off in choices**)
 - i.e. At given resources, production of both the goods cannot be increased together. More of good Y can be produced only with less of good X as resources are scarce



Chapter
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3) the PPF& opportunity cost

- Opportunity cost of good X in terms of good Y = $|\Delta Y / \Delta X|$
- Opportunity cost of good Y in terms of good X = $|\Delta X / \Delta Y|$

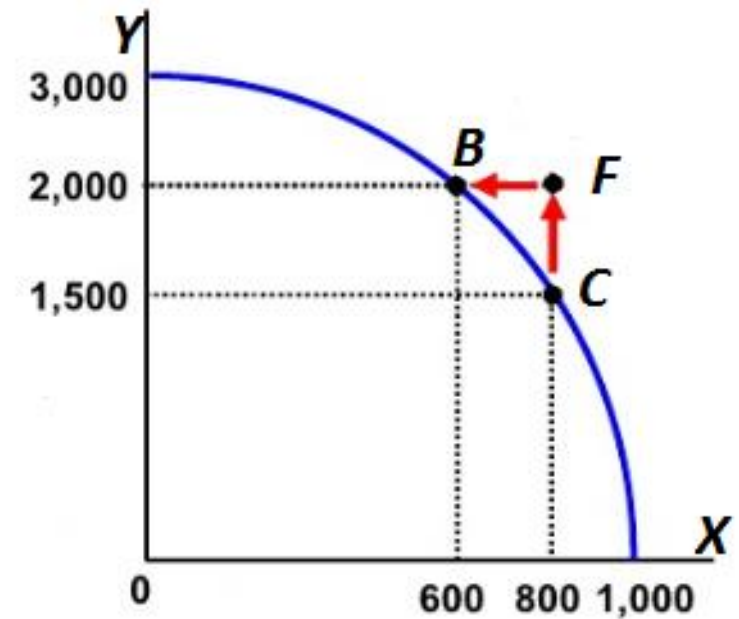


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3) the PPF& opportunity cost

Numerical example

- Start at point **C (800X , 1500Y)** ,
- If we want to increase the number of good Y to **2000**, so we will move **along PPF** from point C to point B , At point **B (600X, 2000Y)** ,



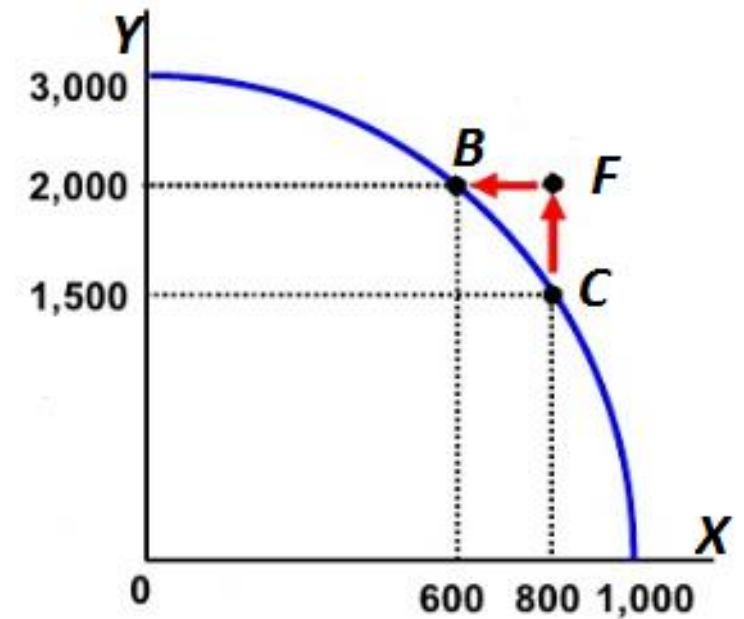
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3) the PPF& opportunity cost

Numerical example

-So, to increase the production of good Y by 500 (2000-1500) ,

We must decrease the production of good X by 200(800-600)



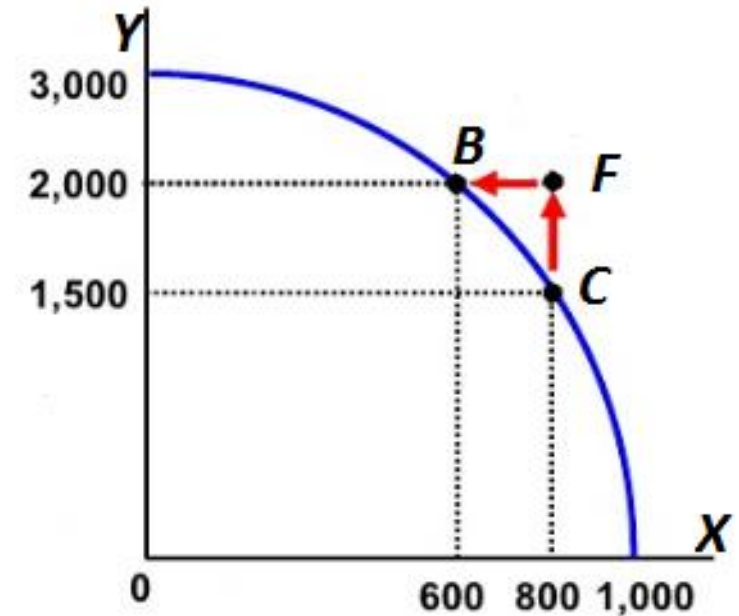
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3) the PPF& opportunity cost

Numerical example

- **Opportunity cost of good Y in terms of good X** = | the decrease in X / The increase in Y |

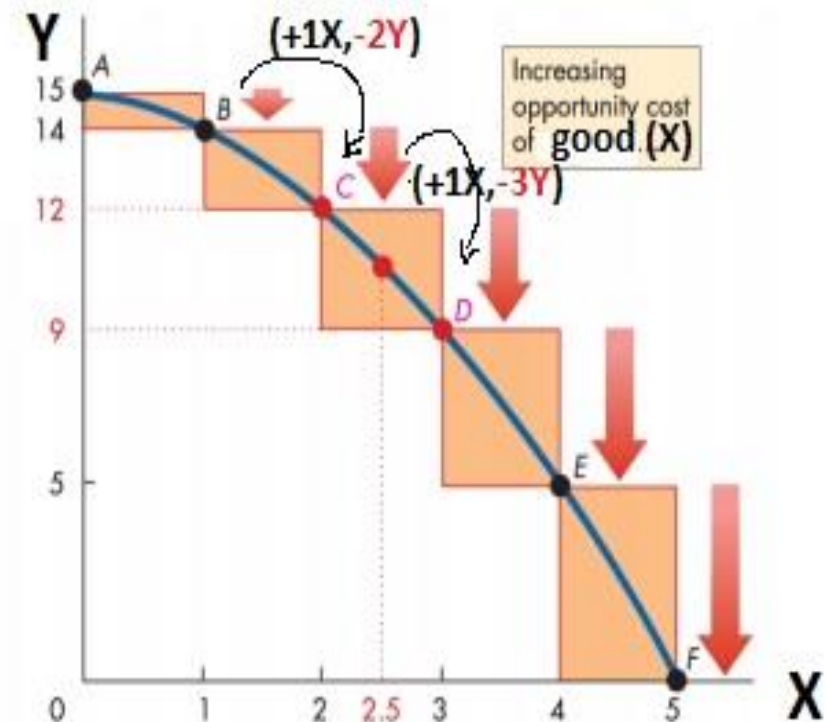
- **Opportunity cost of good Y in terms of good X** = $|200/500| = 0.4$,
- Means **The cost of producing one more unit of good Y is giving up 0.4 units of good X**



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01

3) the PPF& opportunity cost

Why does the PPF concave?

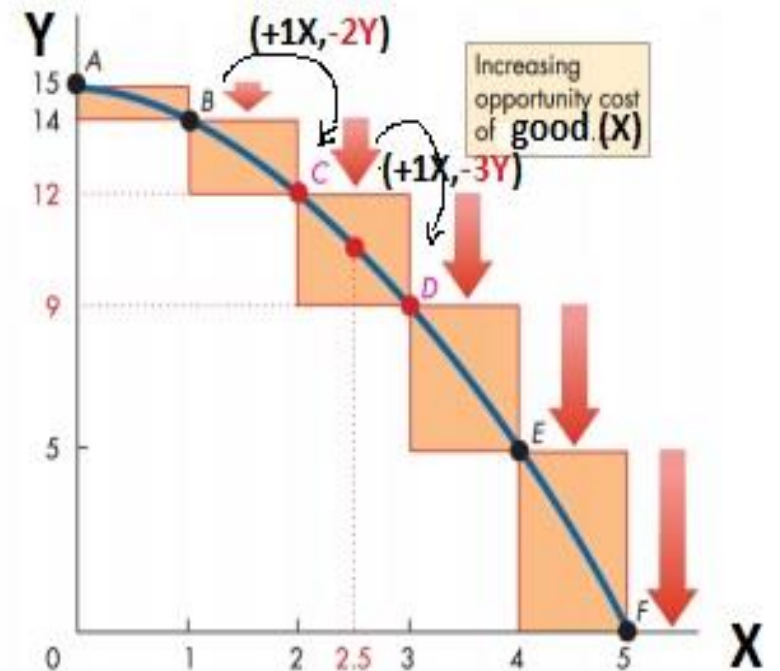


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3) the PPF& opportunity cost

Why does the PPF concave?

- **The Concavity of the PPF means that** as the quantity produced of each good increases, So when one factor is shifted from the production of one good to another, then its productivity falls, causing marginal opportunity cost of increasing product to rise,



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01

3) the PPF& opportunity cost

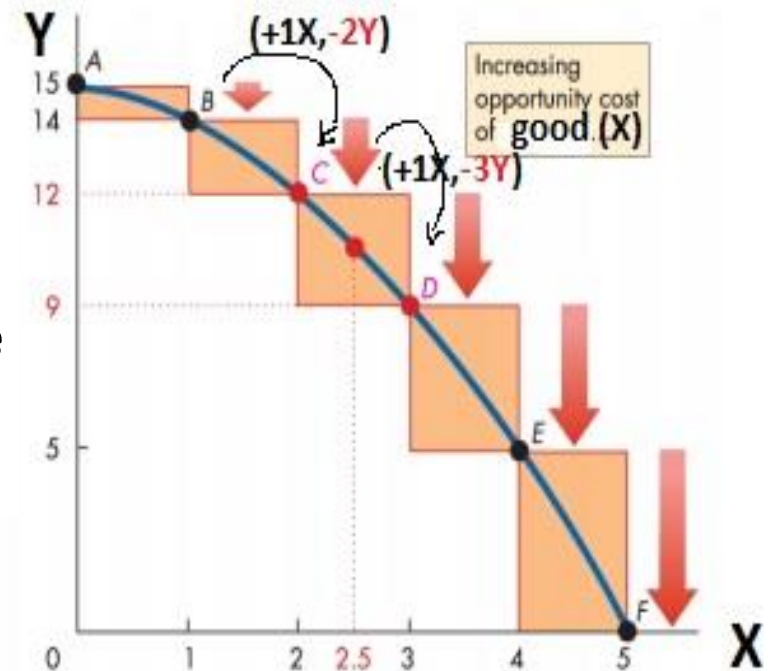
Why does the PPF concave?

As we **move down** along PPF

→ produce **additional unit of one good**

→ more and **more units of the other good needed to be sacrificed** → **The opportunity cost increases**

→ Causes **the concave shape of PPF**



Chapter
01

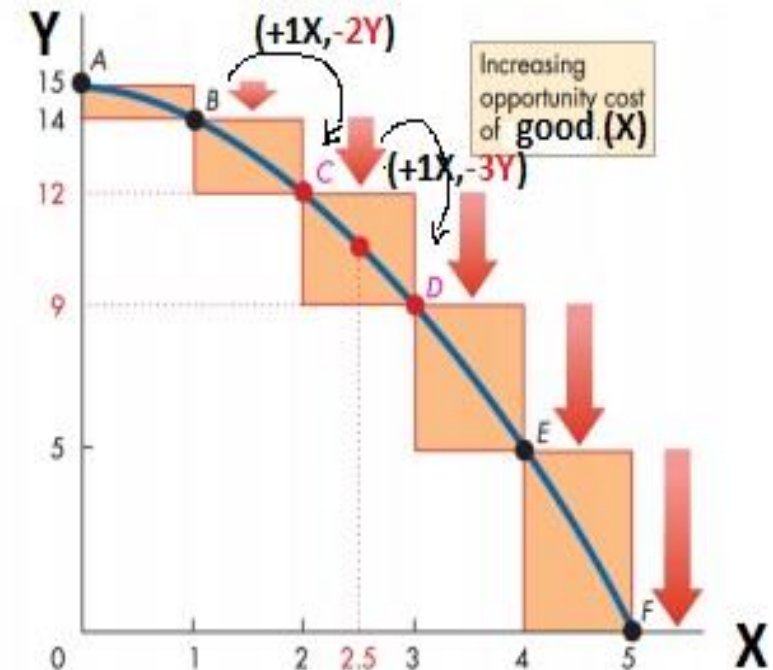
3) the PPF& opportunity cost

Why does the PPF concave?
Numerical example

1) Starting at point **B (1X, 14 Y)**

2) B→C: if we move down to point (C) to produce additional unit of good X → so we will sacrifice 2 units of Y (14-12) so we will move to point **C (2X, 12Y)**

- opportunity cost for good X = $|\Delta Y / \Delta X| = 2$



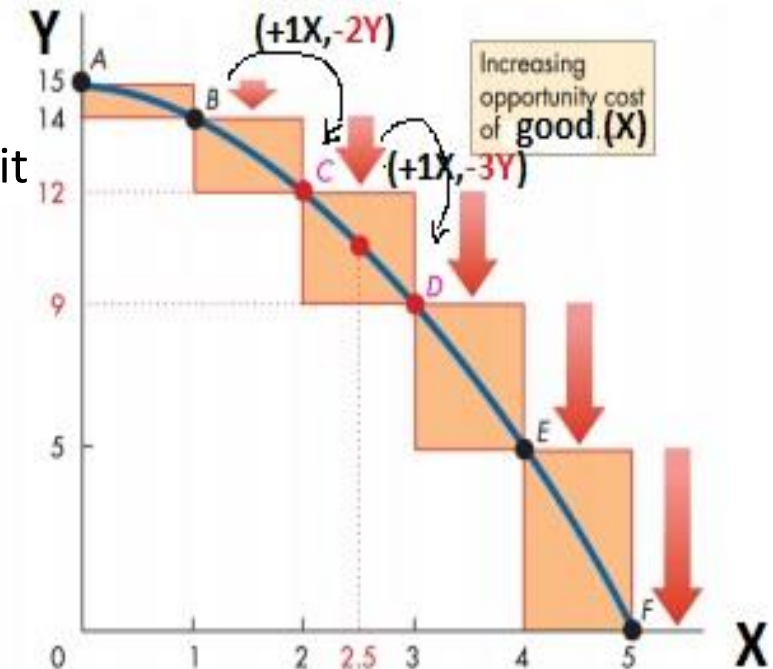
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3) the PPF& opportunity cost

Why does the PPF concave?
Numerical example

3) C→D: if we move down to point (D) to produce additional unit of good X → so we will sacrifice 3 units of Y(12-9) so we will move to point D (3X, 9Y)

- opportunity cost for good X = $|\Delta Y / \Delta X| = 3$



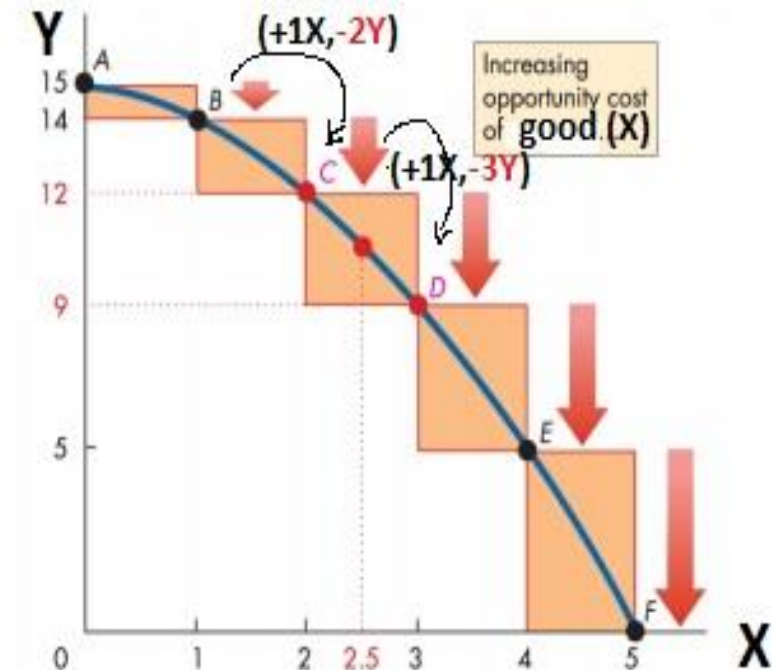
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3) the PPF& opportunity cost

Why does the PPF concave?
Numerical example

4) So, as we move down along PPF ($B \rightarrow C \rightarrow D$)

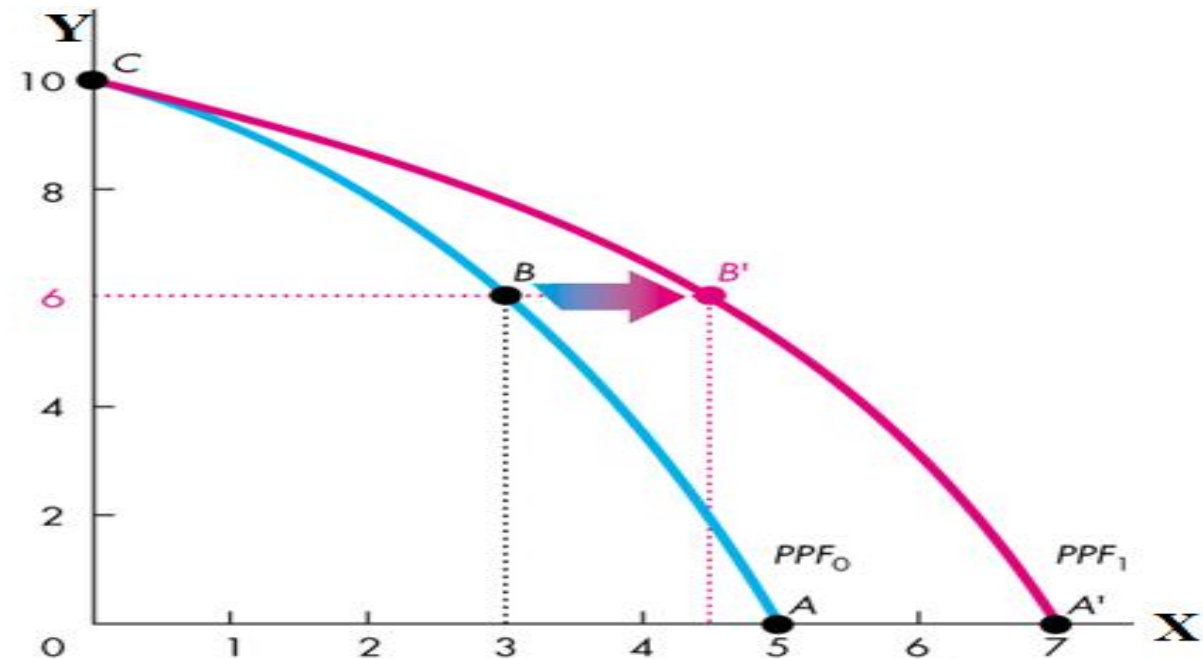
- Good (X) increases
- Sacrifice more and more of good (Y)
- opportunity cost for good X increases
 - so, the PPF is concave



Chapter
01

4) the PPF& Economic Growth

Economic growth **shifts** the PPF outward.



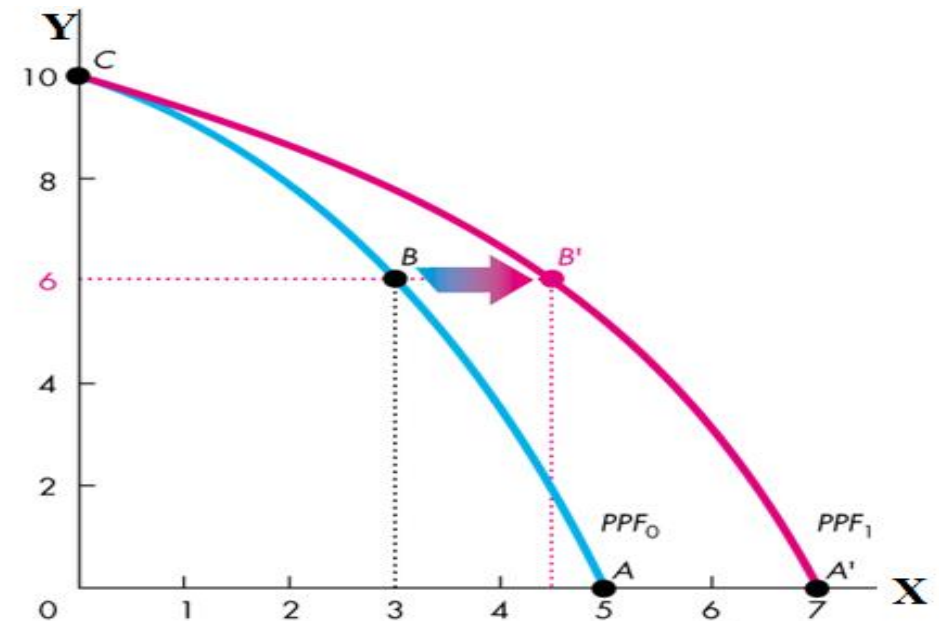
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4) the PPF& Economic Growth

- The two key factors that generate economic growth are

1) Technological change

- allows an economy to **produce more** of goods **with the same amount of limited resources**

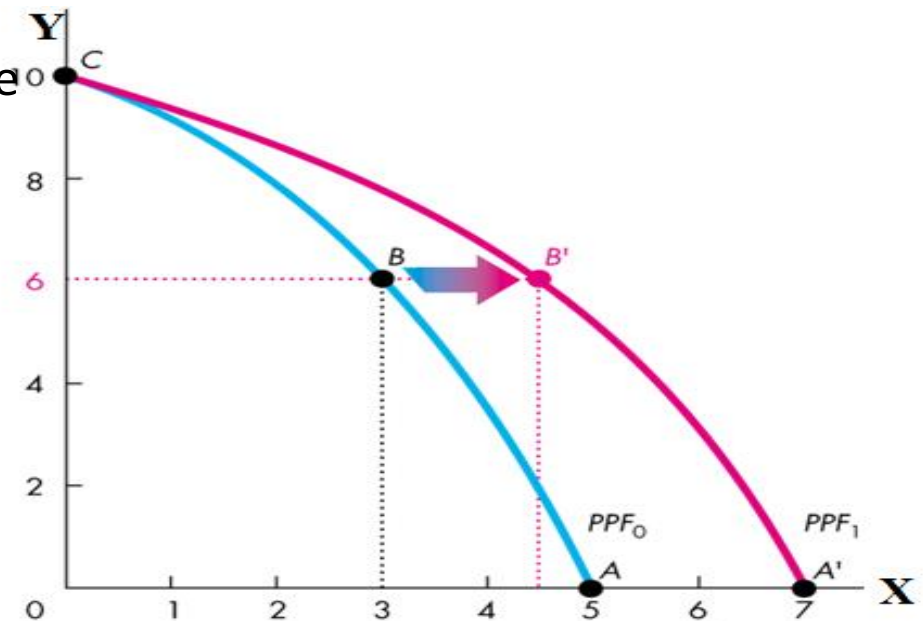


Chapter
01

4) the PPF& Economic Growth

➤ The two key factors that generate economic growth are
2) **Capital accumulation (human capital).**

- The growth of capital resources including human capital, Means that an economy has **increased its available resources for production of goods.**



Think

The production possibilities frontier represents_____.

- A) the maximum number of resources available at any given time.
- B) combinations of goods and services that do not fully use available resources.
- C) the maximum rate of growth of output possible for an economy.
- D) the maximum levels of production that can be attained.**

When producing at a production efficient point, _____.

- A) our choice of the goods can be either on or within the production possibilities frontier
- B) we can satisfy our all wants
- C) the opportunity cost of another good is zero
- D) we face a tradeoff and incur an opportunity cost**



Think

A production possibilities frontier figure does NOT illustrate _____.

- A) the limits on production imposed by our limited resources and technology.
- B) who gets the goods.**
- C) opportunity cost.
- D) attainable and unattainable points.

Scarcity is represented on a production possibilities frontier figure by _____.

- A) the amount of the good on the horizontal axis forgone.
- B) the fact that there are only two goods in the diagram.
- C) technological progress.
- D) the fact there are attainable and unattainable points.**



Think

A country that *must* decrease production of one good in order to increase the production of another_____.

- A) must be using resources inefficiently.
- B) must be producing on its production possibilities frontier.**
- C) must be producing beyond its production possibilities frontier.
- D) must have private ownership of property.

Production points inside the production possibilities frontier_____.

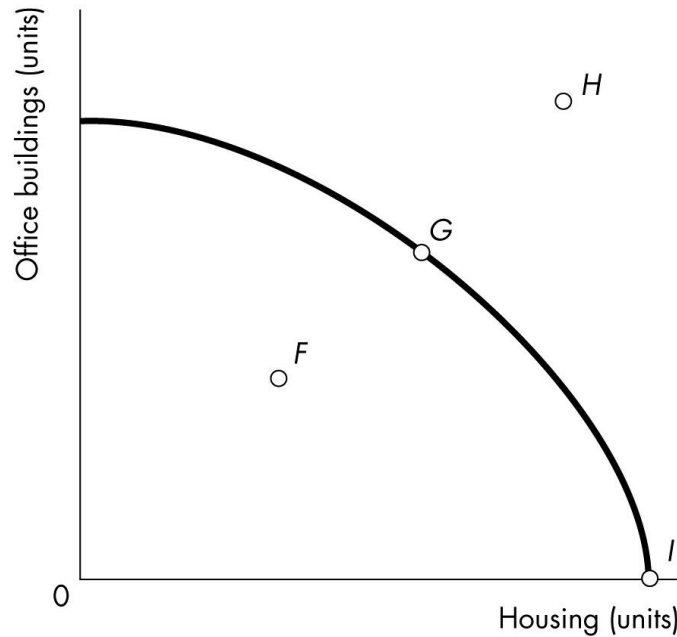
- A) are unattainable.
- B) are attainable only with the full utilization of all resources.
- C) are associated with unused or misallocated resources.**
- D) result in more rapid growth.



Think

Consider the *PPF* for office buildings and housing shown in the figure. Which point in the diagram shows that resources to produce office buildings and housing are being misallocated, unused, or both?

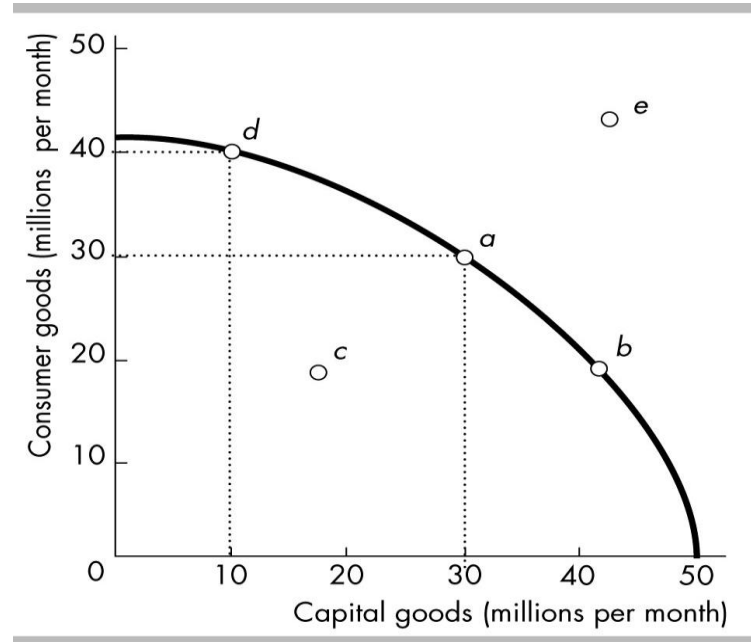
- A) Point *F*
- B) Point *G*
- C) Point *H*
- D) Point *I*



Think

Refer to the production possibilities frontier in the figure. Production point _____ represents an _____ production point.

- A) *b*; unattainable.
- B) *c*; unattainable.
- C) *e*; inefficient.
- D) *c*; inefficient.**



Think

A president of the United States promises to produce more defense goods without any decreases in the production of other goods. This promise can be valid

- A) if the United States is producing at a point on its production possibilities frontier.
- B) if the United States is producing at a point inside its production possibilities frontier.**
- C) if the United States is producing at a point beyond its production possibilities frontier.
- D) only if the production possibilities frontier shifts rightward

Using the production possibilities frontier model, unemployment is described as producing at a point

- A) on the exact middle of the *PPF* curve.
- B) on either end of the *PPF* curve.
- C) inside the *PPF* curve.**
- D) outside the *PPF* curve.



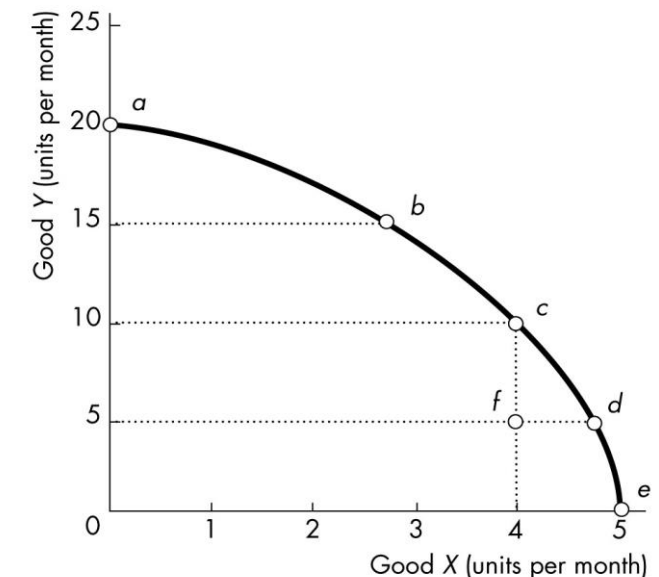
Think

When resources are assigned to inappropriate tasks, that is, tasks for which they are not the best match, the result will be producing at a point

- A) where the slope of the *PPF* is positive.
- B) where the slope of the *PPF* is zero.
- C) inside the *PPF*.**
- D) outside the *PPF*.

The figure above illustrates Mary's production possibilities frontier. If Mary wants to move from point *b* to point *c*, she must

- A) improve technology.
- B) increase the accumulation of capital.
- C) give up some of good *Y* in order to obtain more of good *X*.**
- D) give up some of good *X* in order to obtain more of good *Y*.



Think

A nation can *produce* at a point outside its *PPF*

- A) when it trades with other nations.
- B) when it produces inefficiently.
- C) when its *PPF* is bowed out.
- D) never.**

A key factor that leads to economic growth is

- A) human capital accumulation.**
- B) increasing current consumption.
- C) avoiding the opportunity cost of investment.
- D) Both answers A and B are correct.



Summary outlines

1. Definition of PPF
2. The PPF& Scarcity
3. The PPF& Efficiency
4. The PPF& Inefficiency
5. The PPF& Opportunity cost
6. The PPF& Economic Growth





Thank You