Principles of Economics (Spring 2024)
Lecture 2
Production Possibilities Frontier

Part I

Production

Input $\longrightarrow$ Production $\longrightarrow$ Output

❖ __Labor__   ❖ Technology   ❖ __Goods__
❖ __capital__   and
❖ __Natural__   __Servoices__
   __resources__
❖ __Entrepreneurship__ (mind)
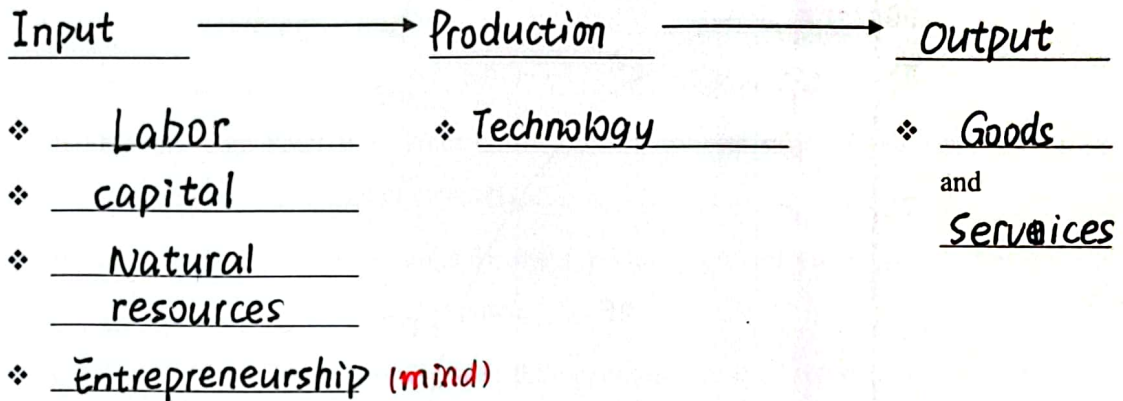
- **Assumptions**
   ○ __Fix quantity__ and __quality__ of
      __natural resources__.
   ○ __Technology__ is __given__.
   ○ __Some Inputs__ are __specialized__.
   ○ __Only Two Outputs__.
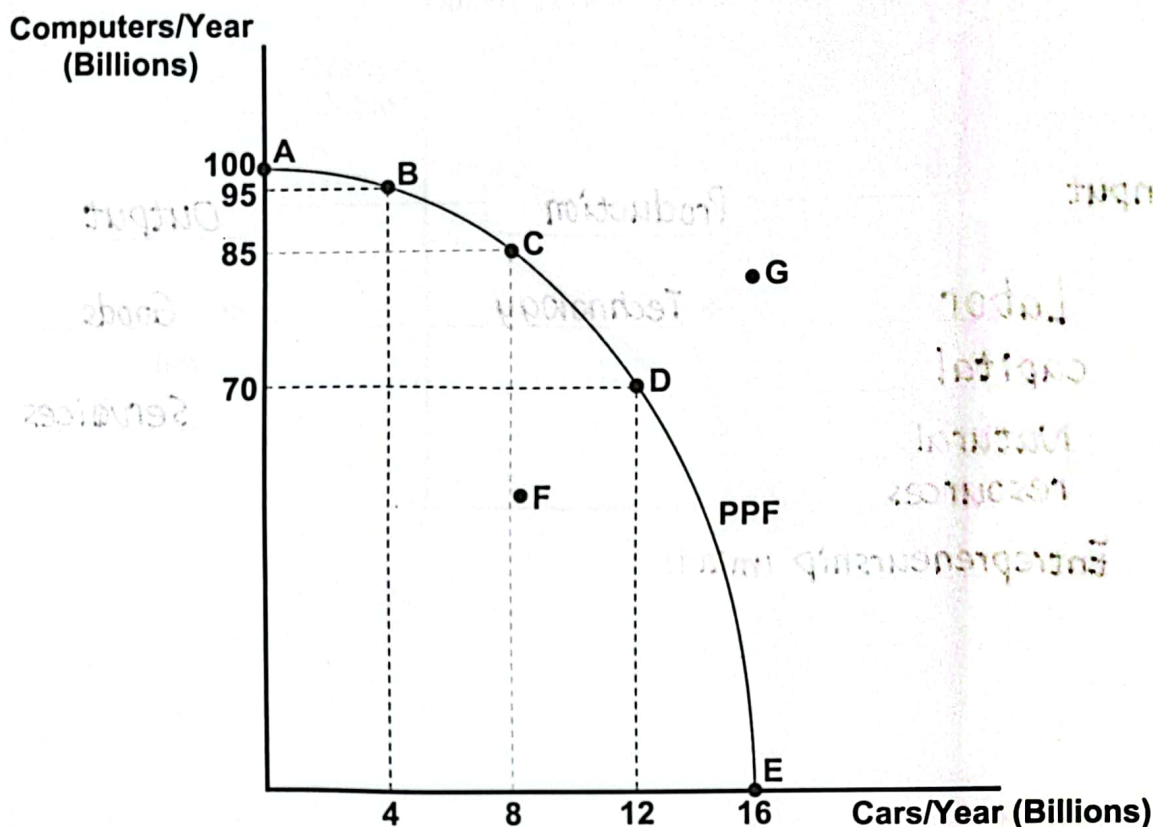
Maximum amout
with given Resource and Technology

Part II   ↑

Production Possibilities Frontier (PPF) – A curve showing the __maximum__
__attainable combination__ of
__two ~~outputs~~ products__ that may be __produced__
with __available resources__
and __current technology__.

Example 1

Computers/Year (Billions)

- **What is the meaning of these points?**

  ○ ___All Points___ on ___ or ___within___ the ___PPF___ represent ___possible annual combination___ of goods that ___can be produced___.

  ○ ___Any point along___ the ___PPF___ represents the ___full utilization___ of ___available resources___.

  ○ Point A – ___All resources are (devoted to)x___ are devoted to ___computers___, and ___100___ billion of them are produced.

  ○ Point E – ___All resources___ are devoted to ___cars___, and ___16___ billion of them are produced.

  ○ Point F – ___Inefficient___: resources are ___underutilized___, ___wasted___ or ___dismanaged___. We could ___produce more___ of ___one item without reducing___ the ___production___ of the ___other item___.

  ○ Point G – ___unattainable___ ___given availabe resources (and technology).___ and ___technology___.

2

- **Opportunity Cost along the PPF**

  o Starting from Point A, where ___100___ billion of ___computers___ are produced, if we move to Point B, we have to ___give up 5___ billion of ___computers___, and we ___gain 4___ billion of ___cars___. The ___opportunity cost___ of the ___first 4___ billion of ___cars___ is ___5___ billion of ___computers___.

  o Moving from Point B → Point C: the opportunity cost of the 4 billion of cars is ___10___ billion of computers.

  o Moving from Point C → Point D: the opportunity cost of the 4 billion of cars is ___15___ billion of computers.

  o Moving from Point D → Point E: the opportunity cost of the 4 billion of cars is ___70___ billion of computers.

- **Implications** – If we achieve productive efficiency, then in a given period, when ___resources___ and ___technology___ are ___fixed___, we can ___obtain more___ of one item ___only___ by ___sacrificing___ the ___opportunity___ to ___produce alternative item___. ___Scarcity___ of ___resources___ and ___fixed technology___ limits how much we can produce in a given period.

example 1: good at play basketball → play piano 😔

✓ some inputs are specialized !   example 2: Time to study / Time to exercise
9 : 1 → nothing much
8 : 2 → changed
1 : 9 → changed
0 : 10 → changed a lot! really bad

- **Law of Increasing Costs** – For a given period, the ___opportunity cost___ of ___each additional unit___ ~~additional unit,~~ output for one good will ___increase___ as ___more___ of ___that good___ is produced, because ___(specialized)ₓ resources specialized___.

  ⇒ ___determines___ the ___shape___ of the ___PPF___

Part III

Economic Growth – An ___increase___ in ___production possibilities___ .

- **Sources of Economic Growth**

  o ___Resource growth___ .

  o ___Improvements___ in ___resource quality___ .

  o ___Advances___ in ___technology___ .

  ➢ ___Investment___ in ___new capital (machine)___ , ___education___ , and ___technology___

 is the major determinant of economic growth. Making investments for the future generally requires the ___sacrifice___ of ___current consumption___ . The greater a nation's ___rate___ of ___investment___ , the greater its ___rate___ of ___economic growth___ .

now work → money
sacrifice, trade off
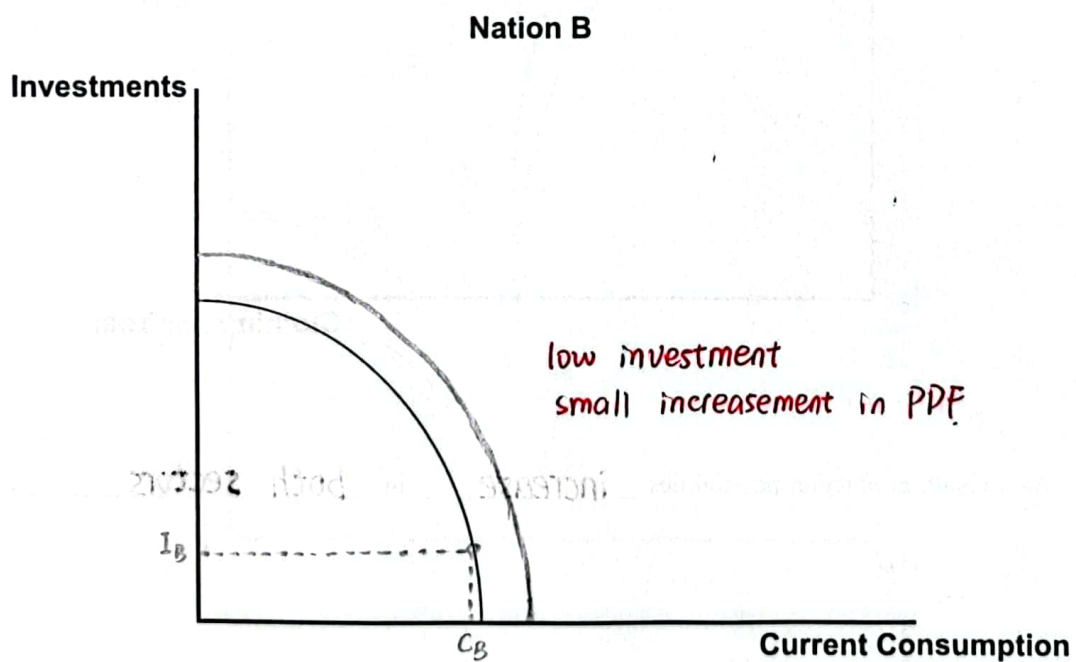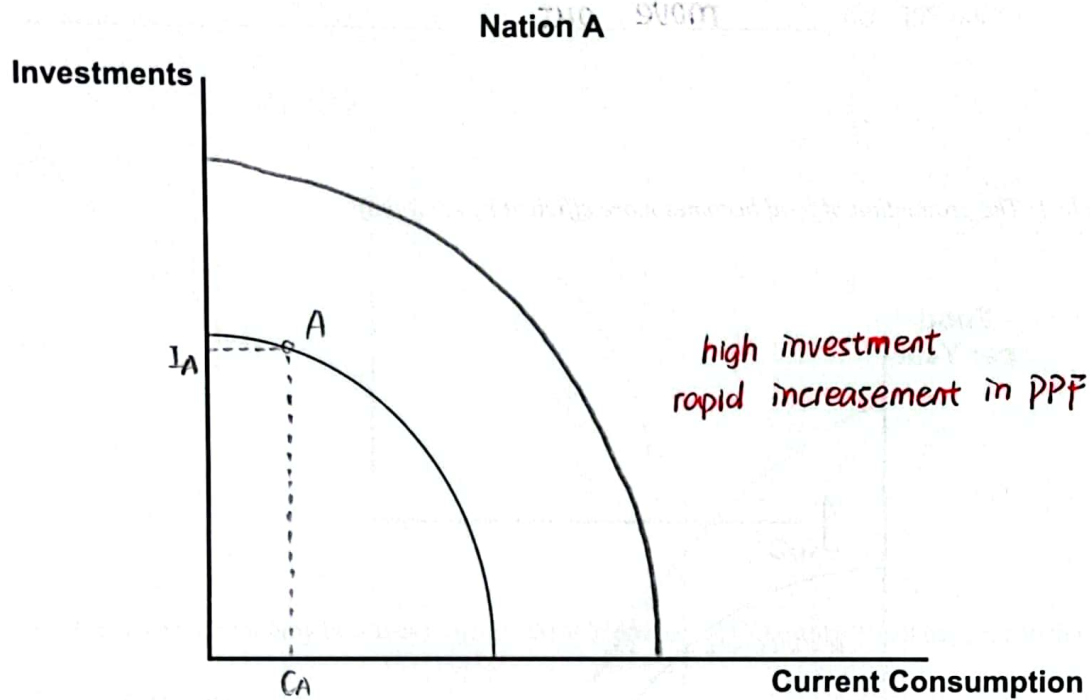*now colledge → no money*
future more money

Part IV

Shifts in the PPF

- **Overall Economic Growth** – The PPF will ___shift out___ .

  resource ↑ — technology ↑

*Example 2: The production of food and clothing both become more efficient*
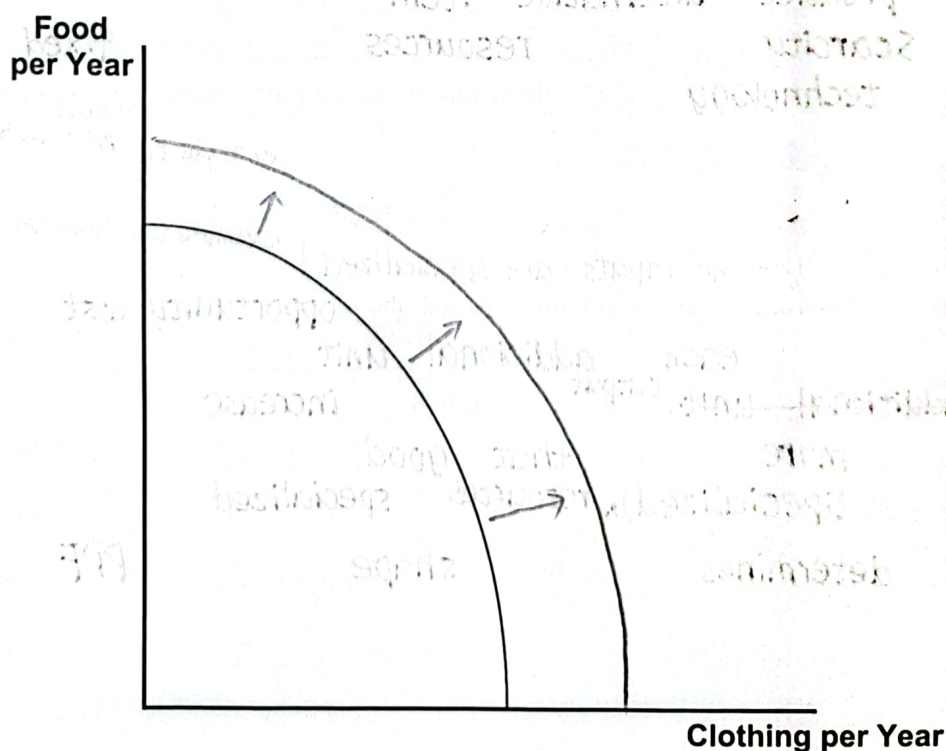
Example 3: Trade-off between investments and current consumption

Nation A

Investments

A

I_A

high investment
rapid increasement in PPF

C_A

Current Consumption

Nation B

Investments

low investment
small increasement in PPF

I_B

C_B

Current Consumption

Both countries begin with the _____**same**_____ production possibilities. Nation A _____**invests more**_____ than Nation B, i.e., _____**Nation A**_____ _____**gives up more current consumption**_____ and thus, has a _____**higher saving rate**_____ than Nation B. Nation A, therefore, ends up with a _____**further increase**_____ in its _____**future**_____ production possibilities.

- **One Sector Economic Growth** – ___One end___
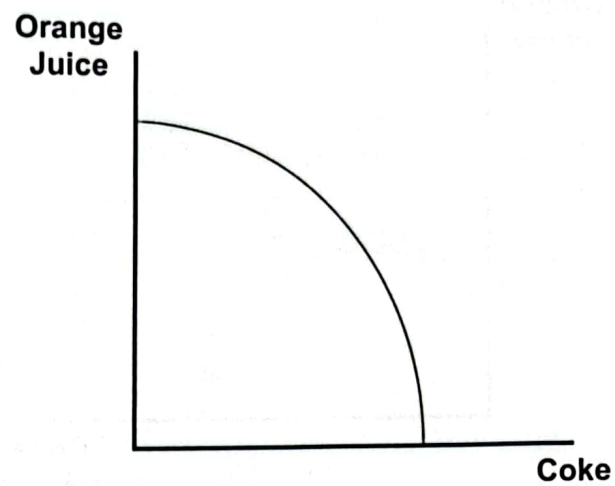 of the PPF will _____move out_____.

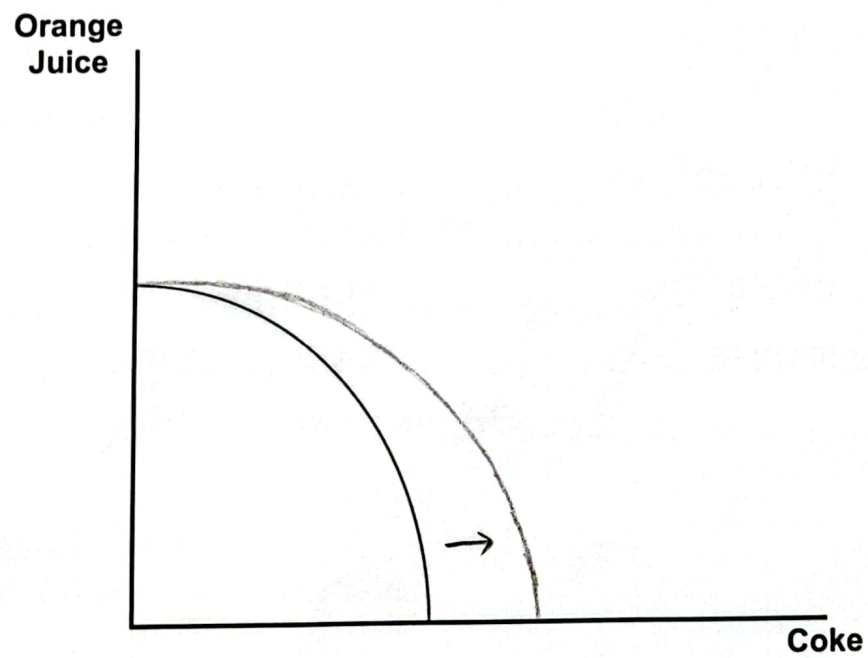*Example 4: The production of food becomes more efficient by itself only*
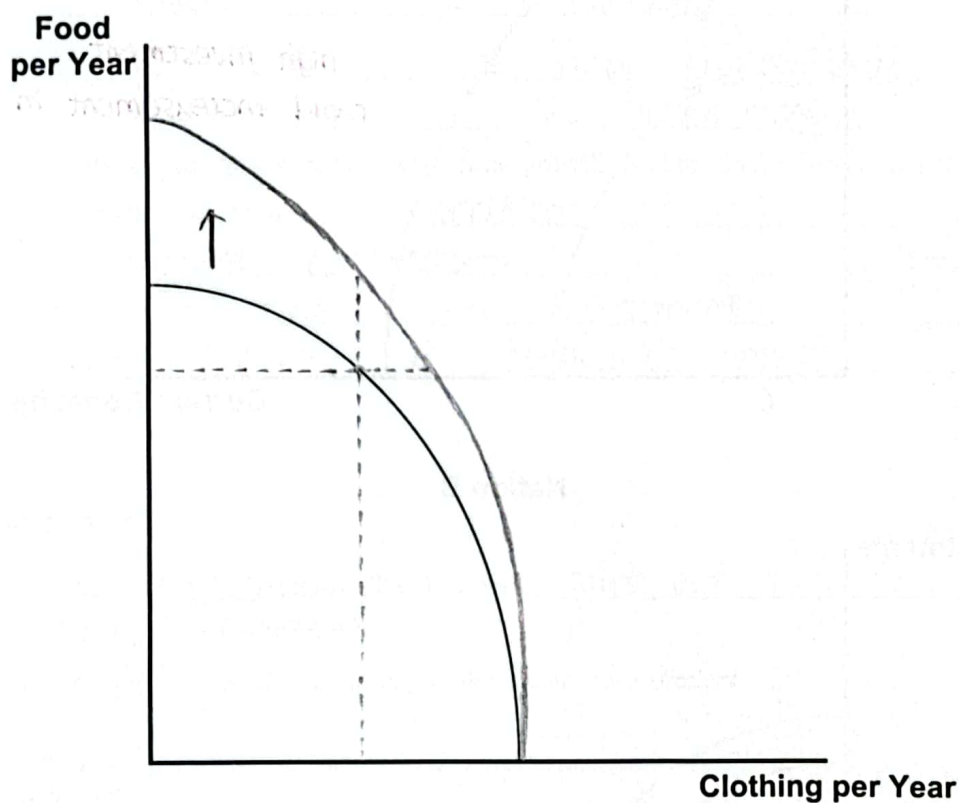
As a result, production possibilities ___increase___ in ___both sectors___.

Exercise 1

Refer to the figure.

1) Suppose the economy becomes more efficient in producing Coke only. What happens to the PPF?

2) Suppose a destructive hurricane in Florida leads to a substantial loss of oranges. What happens to the PPF?