

# I. SCARCITY, CHOICE, AND OPPORTUNITY COST

# Scarcity

- **Economists' Definition:** Someone or something faces a constraint.
- People, firms, and countries all face constraints on what they can consume or produce
- At a point in time, constraints are given. But they can change over time.
- A central subject of economics: How people, firms, and whole countries do the best they can, taking into account the constraints they face.

# Choice

- Because individuals, firms, and whole countries face constraints, they have to make choices.
- Every choice has a cost.
- We refer to this cost as the opportunity cost.

# Opportunity Cost

- **Definition:** The value of what must be forgone to undertake an activity.
- **Opportunity cost is often obvious.**
  - For example, it often reflects trade-offs in the production process.
- **The opportunity cost of a good bought in the market is typically its price.**

# More Subtle Examples of Opportunity Cost

- **Going to college.**
  - Out-of-pocket costs (tuition, books) and forgone earnings while in school
- **Painting your own house.**
  - Out-of-pocket costs (paint, brushes), the value of your time
- **Using theater tickets whose market price has changed since you bought them.**
  - What you could sell the tickets for at the time of use (plus the value of your time).

## II. THE PRODUCTION POSSIBILITIES CURVE

# Production Possibilities Curve (PPC)

- Diagram showing the combinations of two types of goods that could be produced in an economy just using all of the available inputs:
  - Labor (people's time for work and abilities)
  - Capital (land, buildings, machines, factories, know-how)
- First example of an economic model.

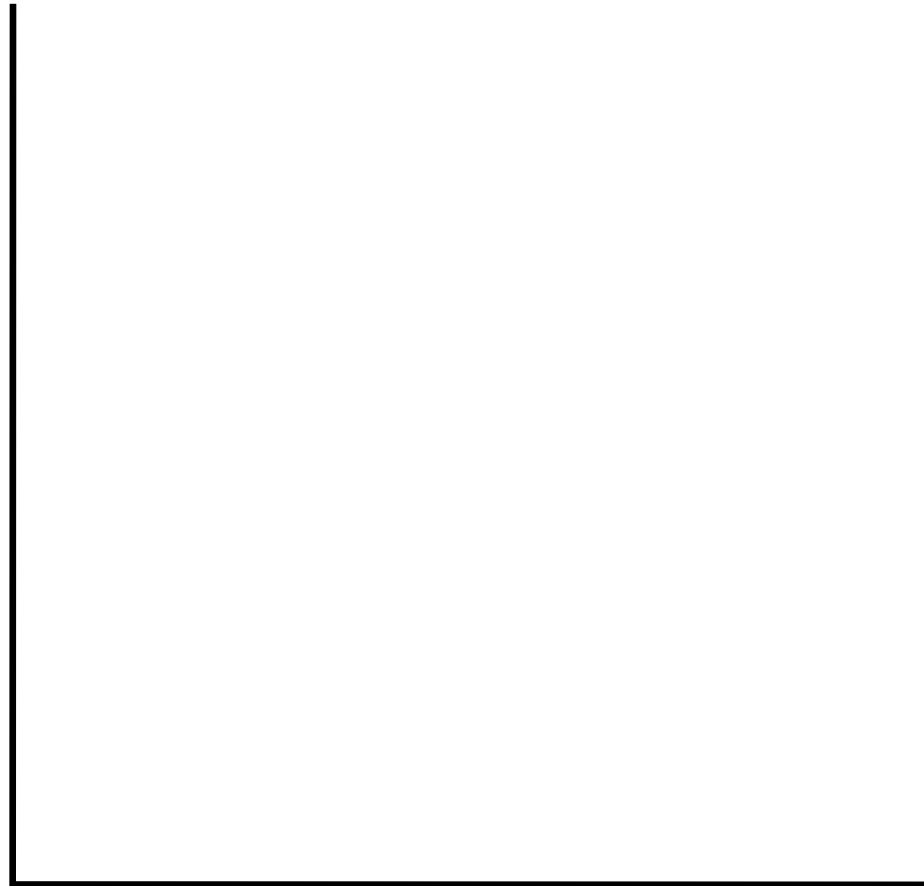
## Example: The PPC for the U.S. Economy Dividing Production into Consumption vs. Investment Goods

- **Consumption Goods:** Goods (and services) that satisfy some current want for people.
  - Examples: Food, clothing, housing, policing
- **Investment Goods:** Goods (and services) that will make us more productive in the future.
  - Examples: Machines, buildings, infrastructure, education, R&D (=research and development by firms)
- **Quantitatively:** 75% of US Production is for consumption and 25% for gross investment



# PPC for Consumption and Investment Goods

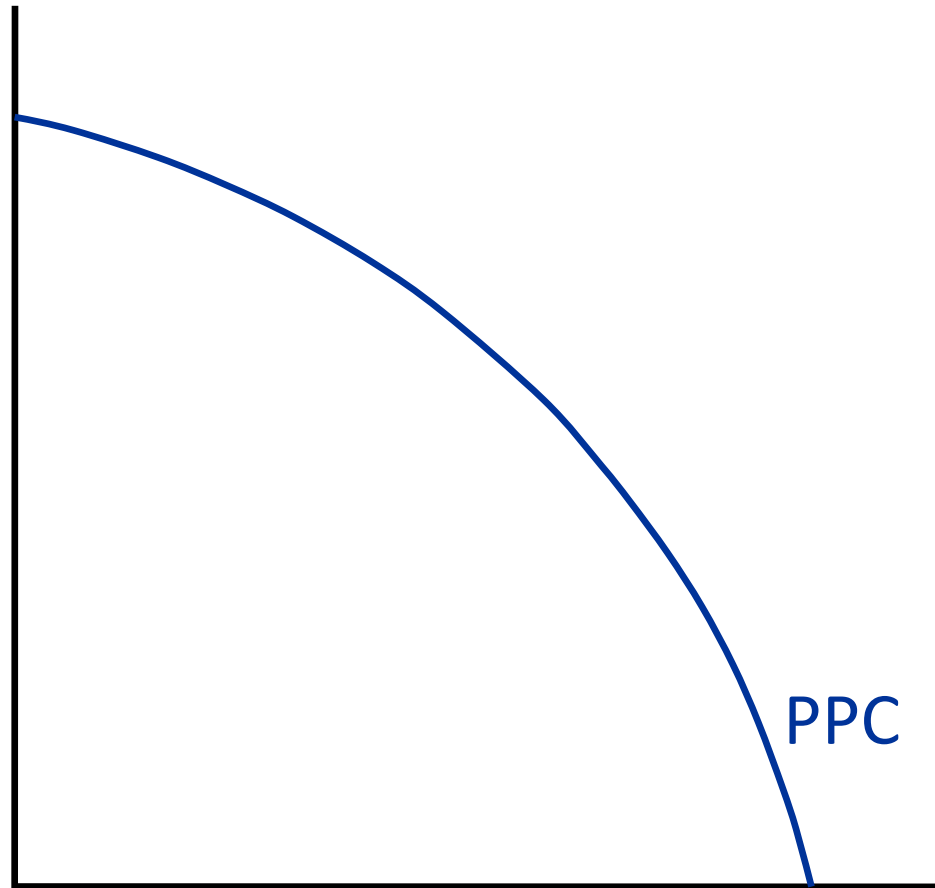
Investment Goods (I)



Consumption Goods (C)

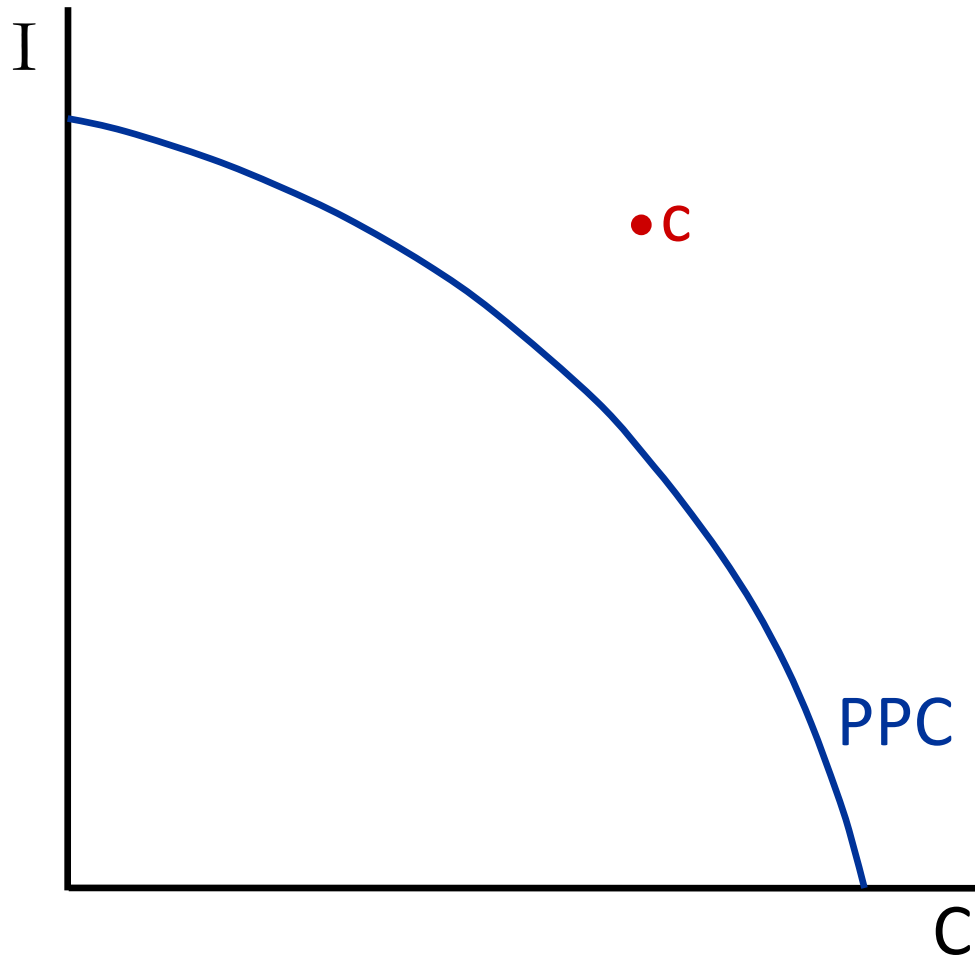
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Investment Goods (I)

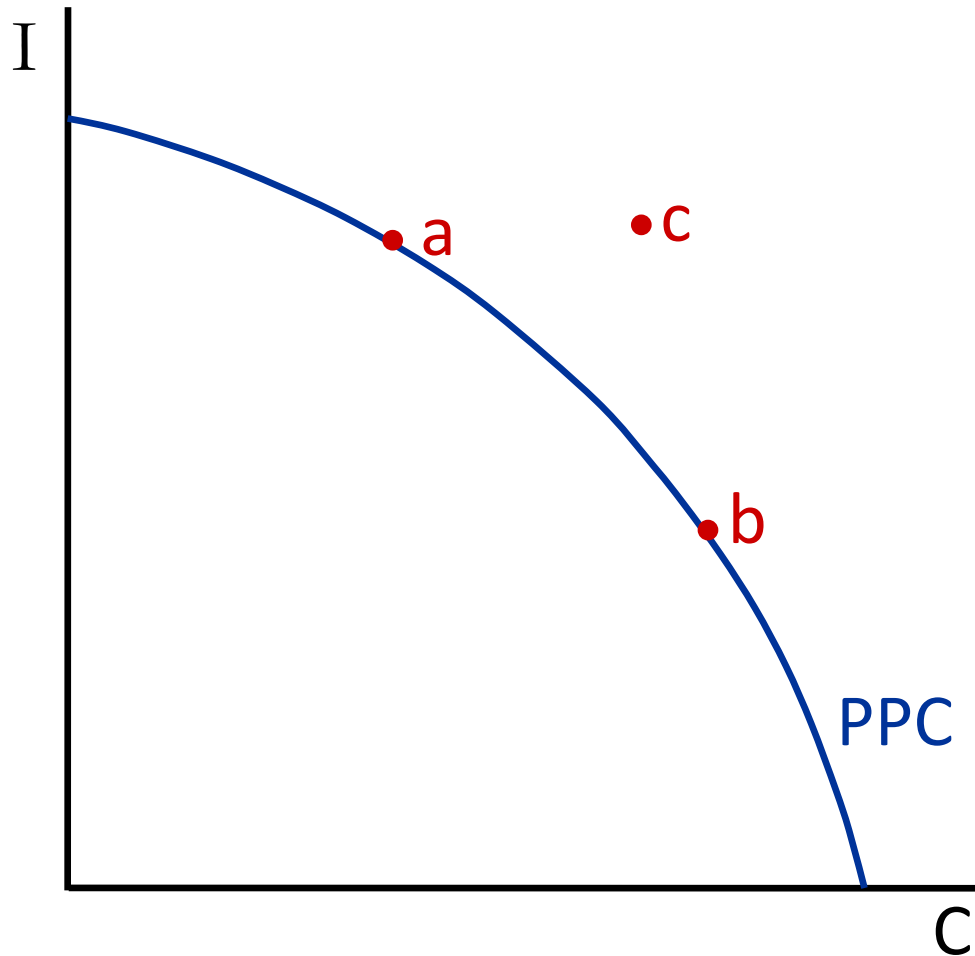


Consumption Goods (C)

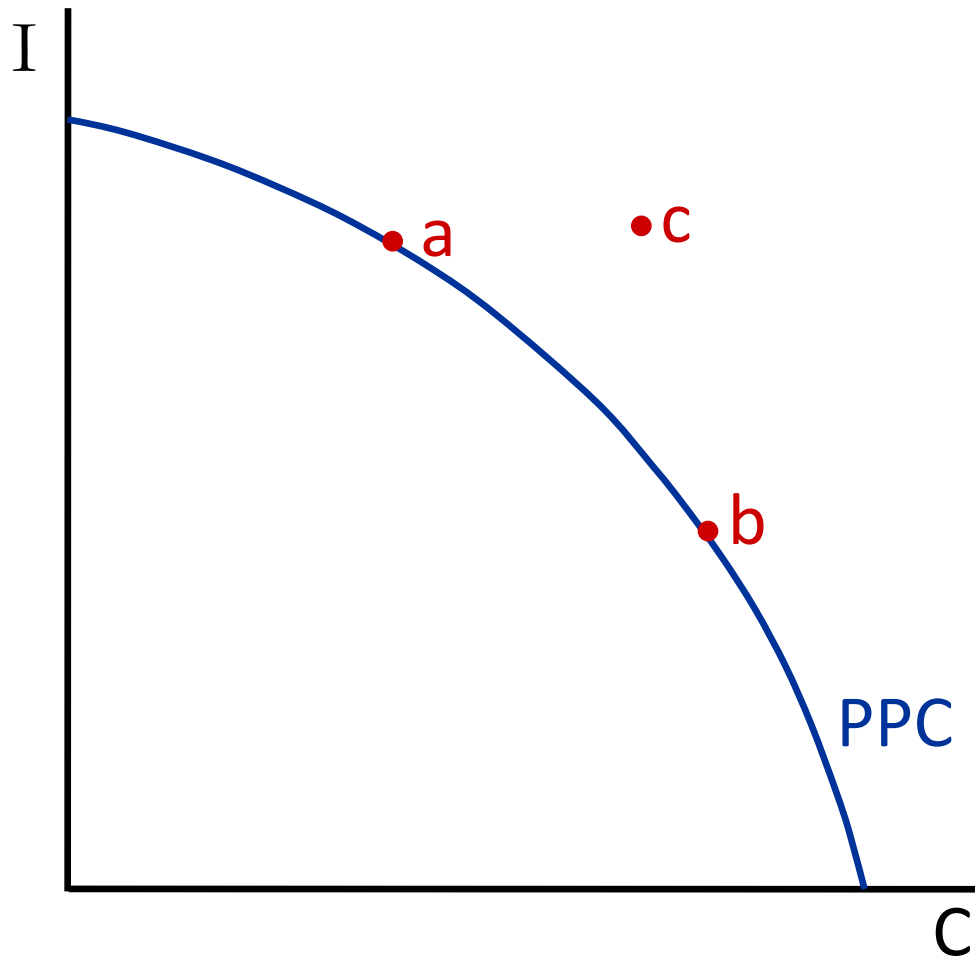
# Using the PPC to Visualize Scarcity and Choice



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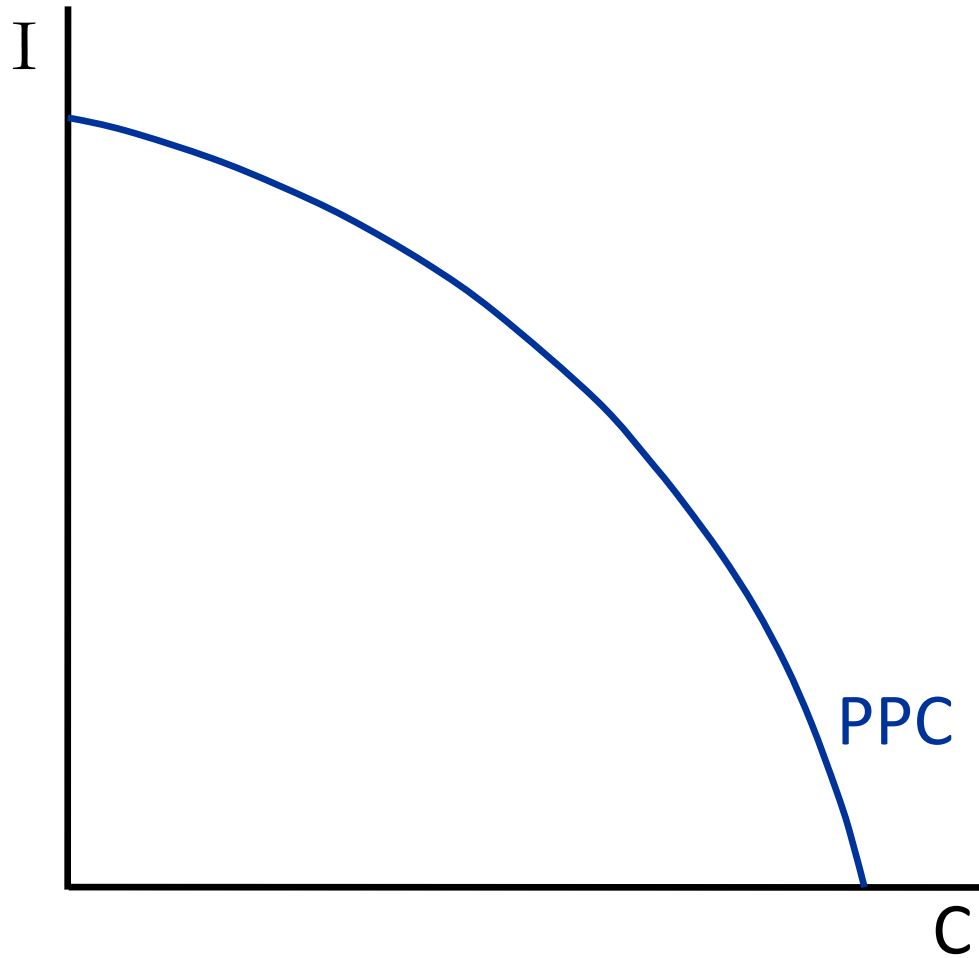


# Using the PPC to Visualize Scarcity and Choice

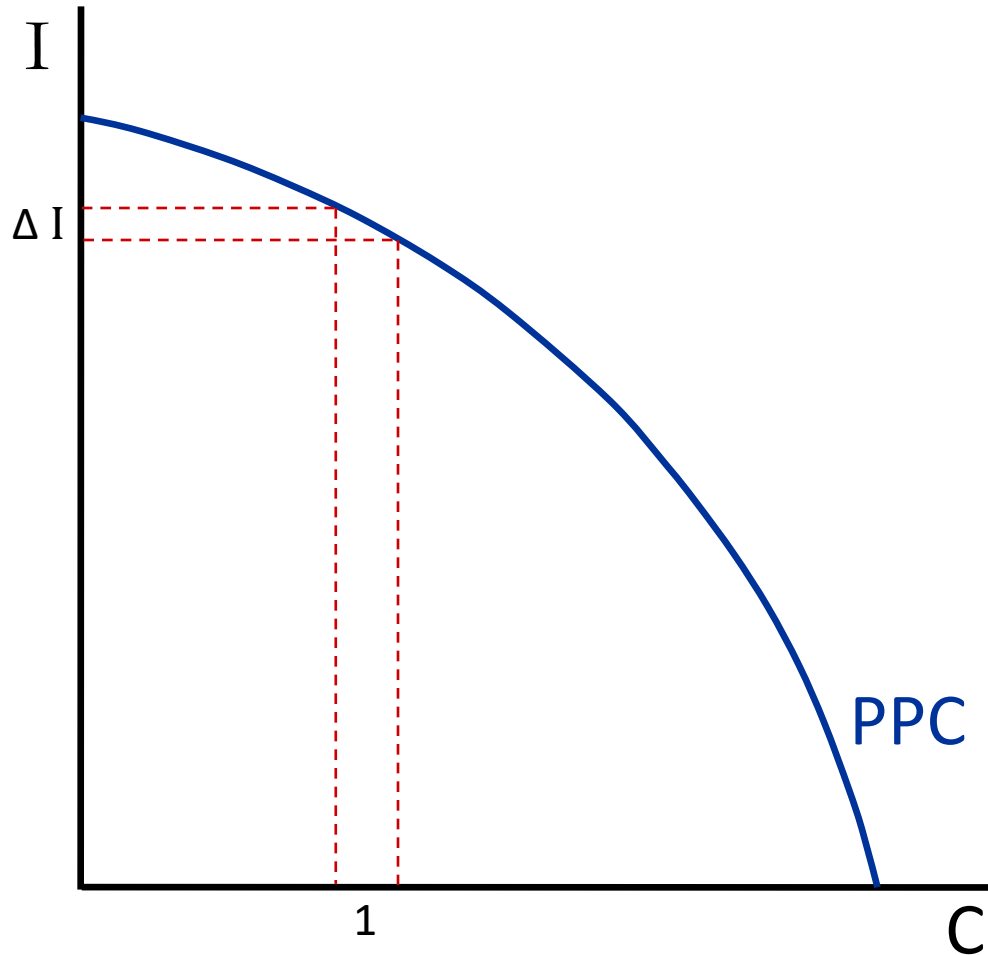


Scarcity is reflected by the fact that some combinations (such as c) are unattainable. Choice is reflected by the fact that a country has to choose which attainable combination to actually produce.

# Opportunity Cost and the PPC

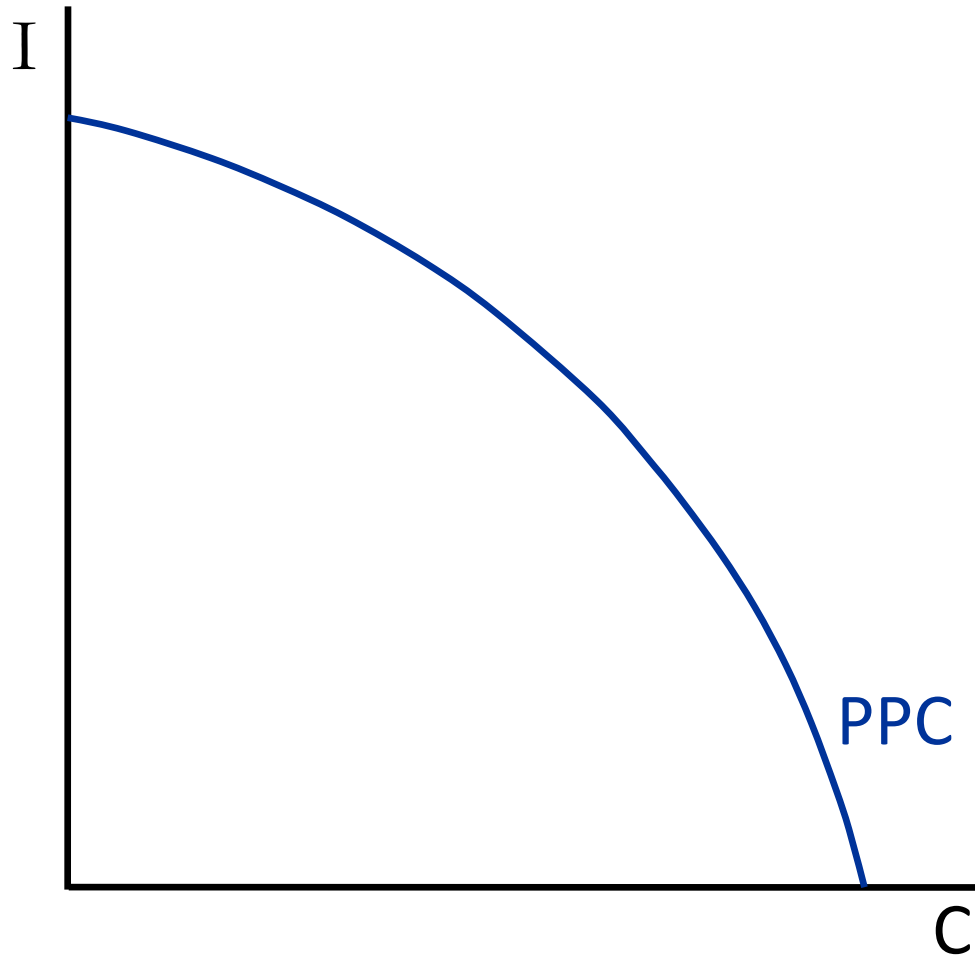


# Opportunity Cost and the PPC



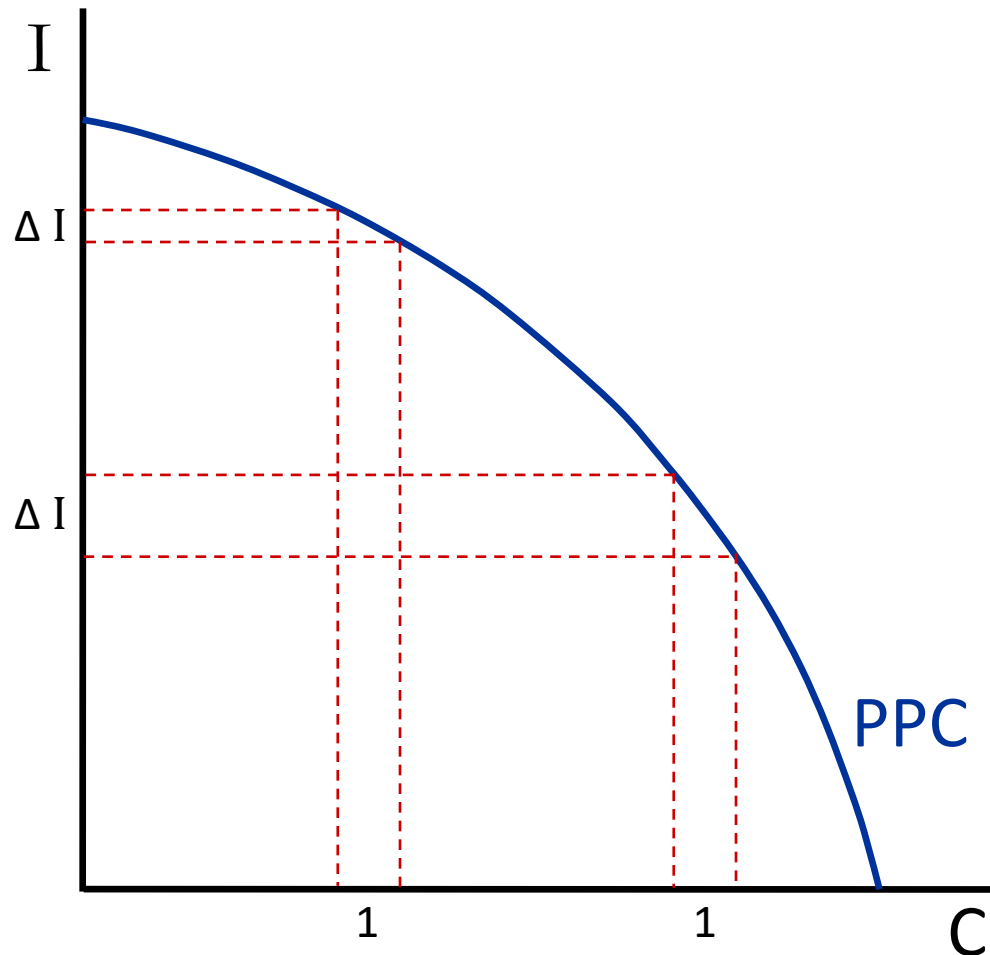
The slope of the PPC is (minus) the opportunity cost of the good on the horizontal axis.

# What Does It Mean If the PPC Is Curved?





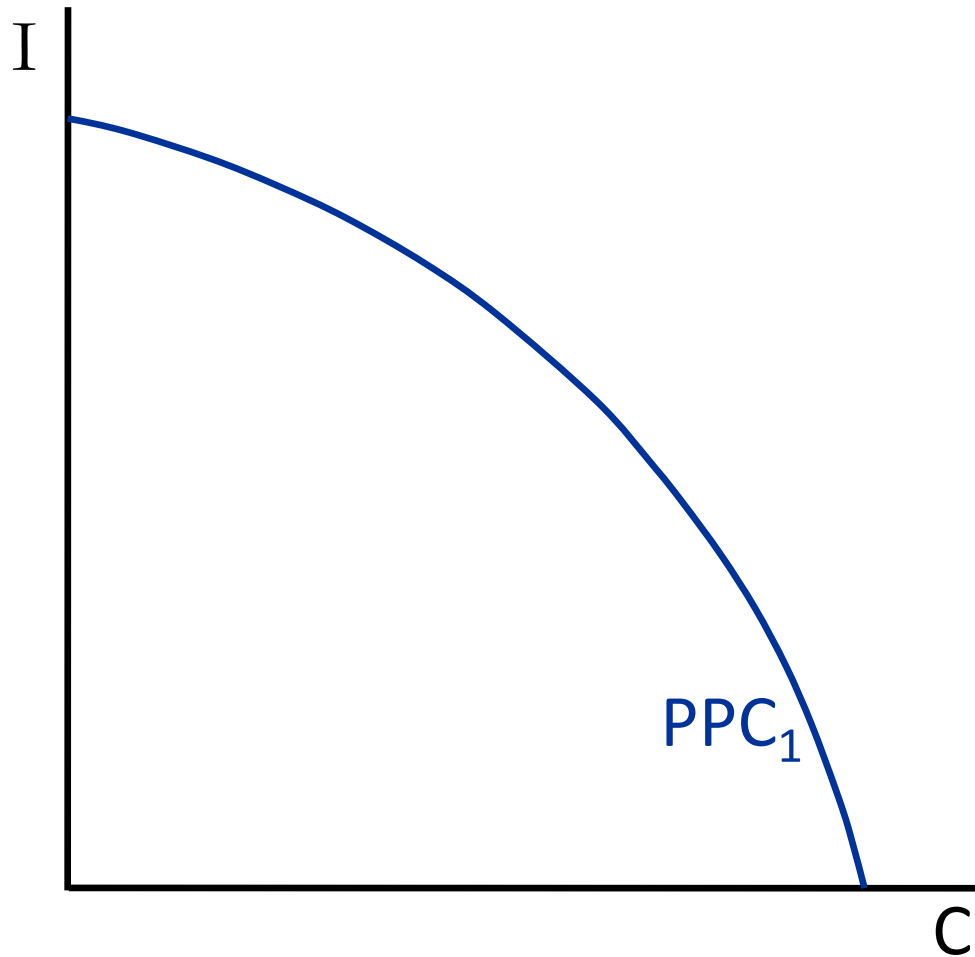
# What Does It Mean If the PPC Is Curved?



A curved PPC implies that the opportunity cost of the good on the horizontal axis is rising as more is produced (e.g., it becomes harder and harder to produce oil in a country)

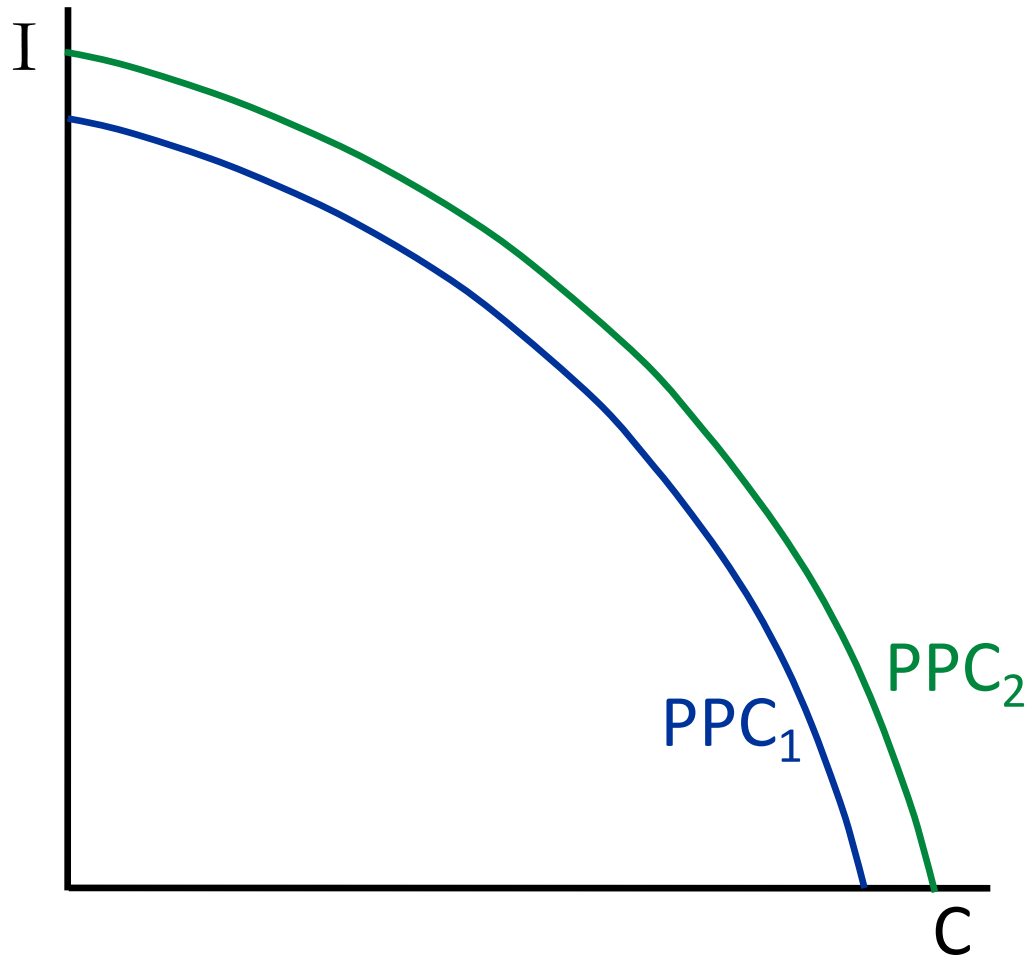
# PPC for Consumption and Investment Goods

## Immigration or Other Labor Force Growth



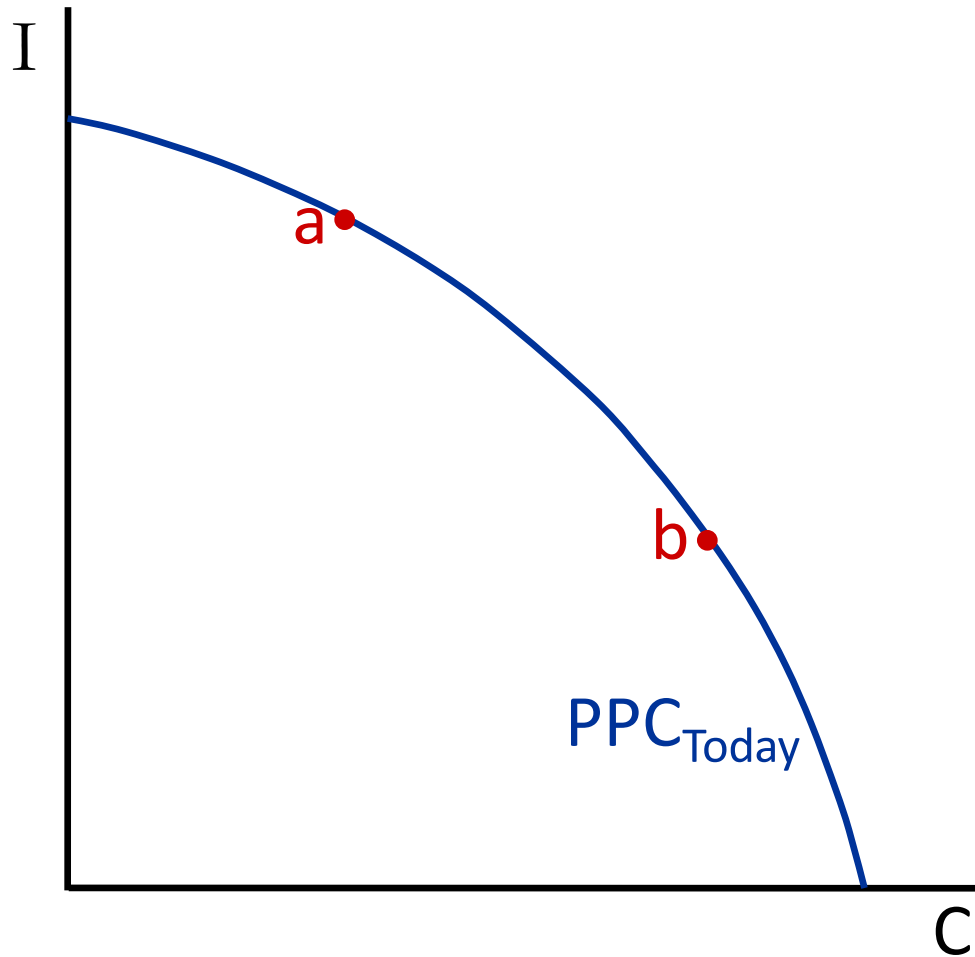
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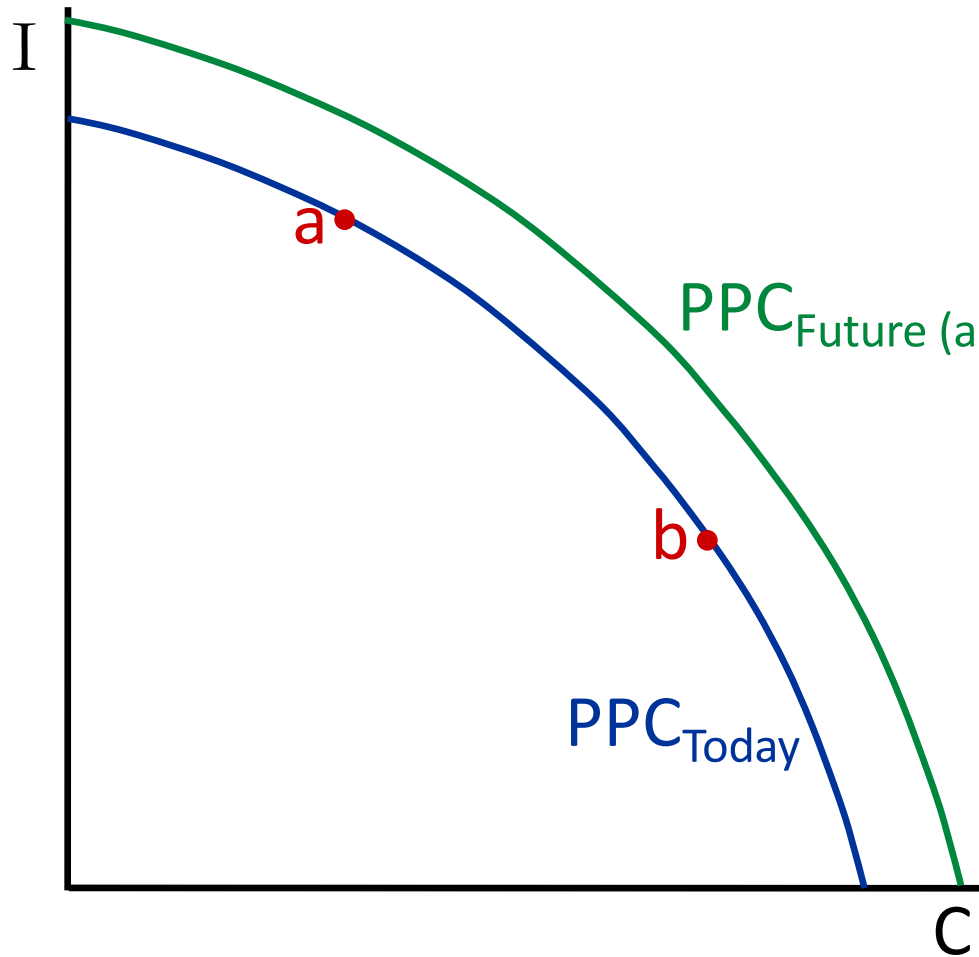
# PPC for Consumption and Investment Goods

## Choices Today May Affect PPC in the Future



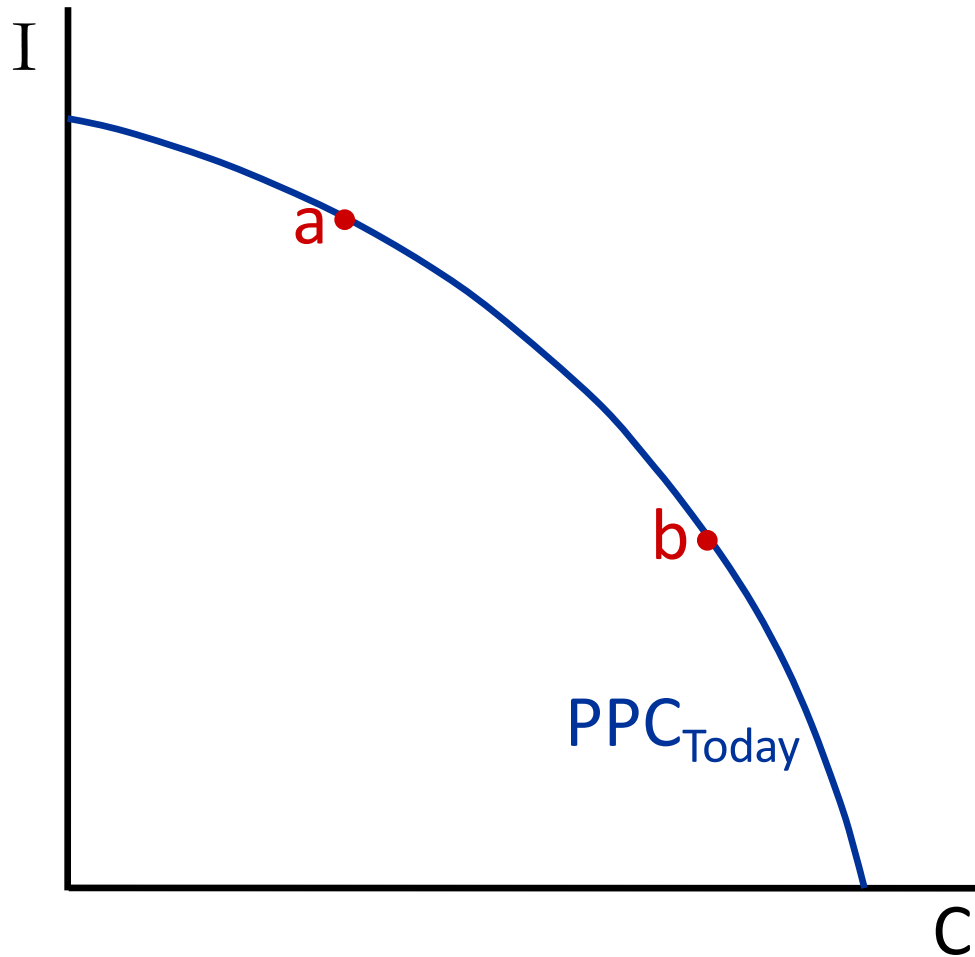
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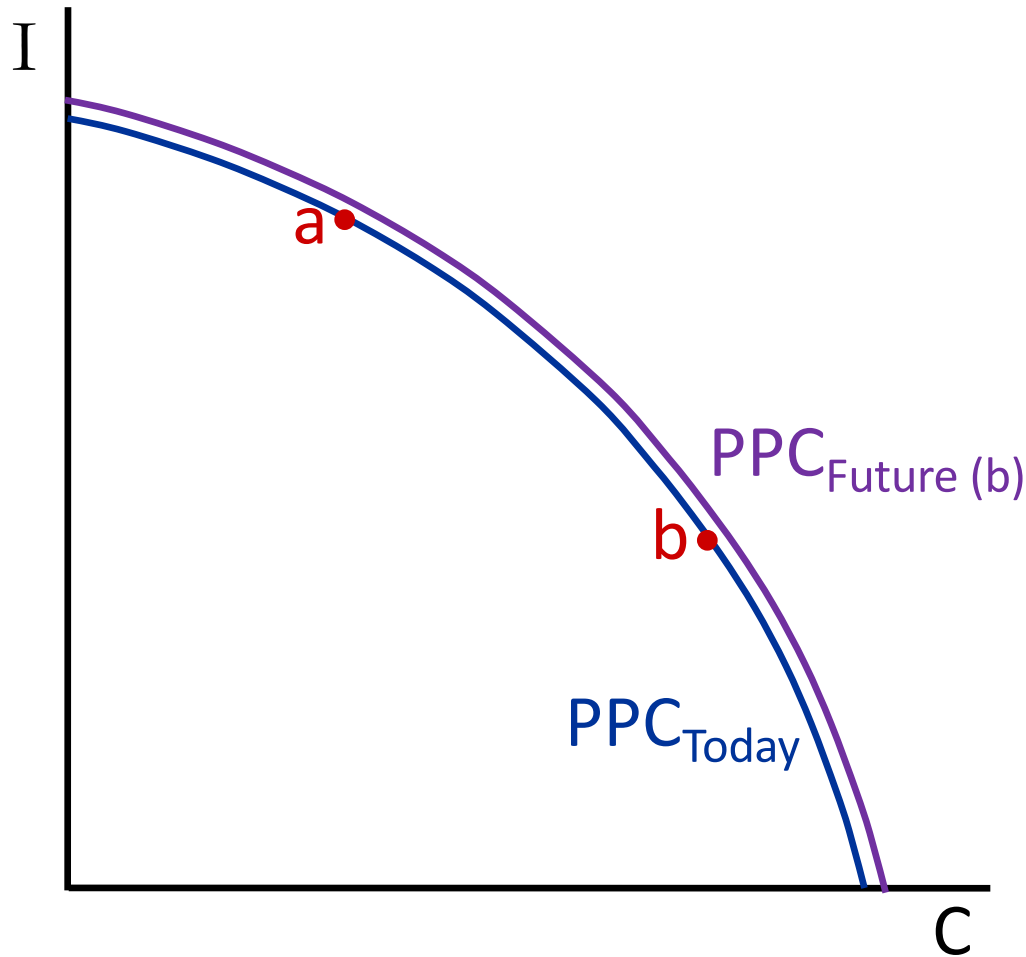
# PPC for Consumption and Investment Goods

## Choices Today May Affect PPC in the Future



# PPC for Consumption and Investment Goods

## Choices Today May Affect PPC in the Future



## Quiz:

Question: An economy's PPC slopes down (rather than up) because:

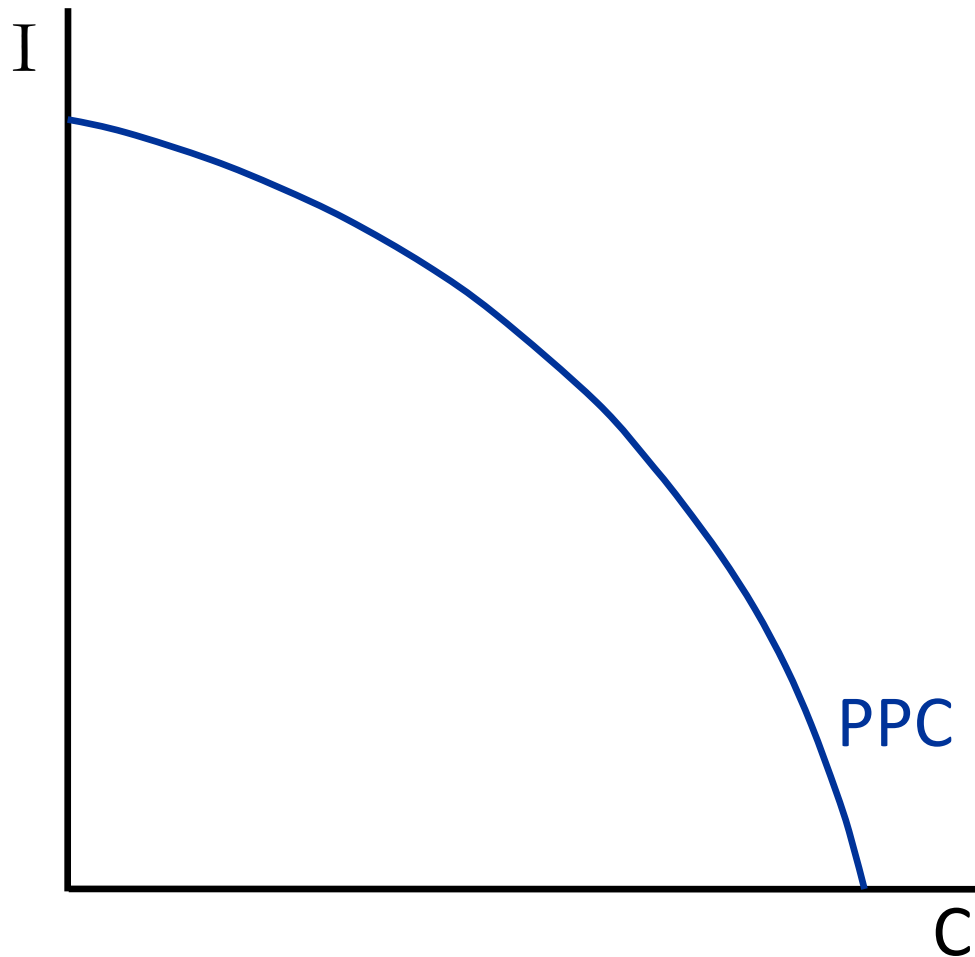
- A. There are trade offs
- B. We are looking at just one economy
- C. There are only two types of output
- D. I don't know



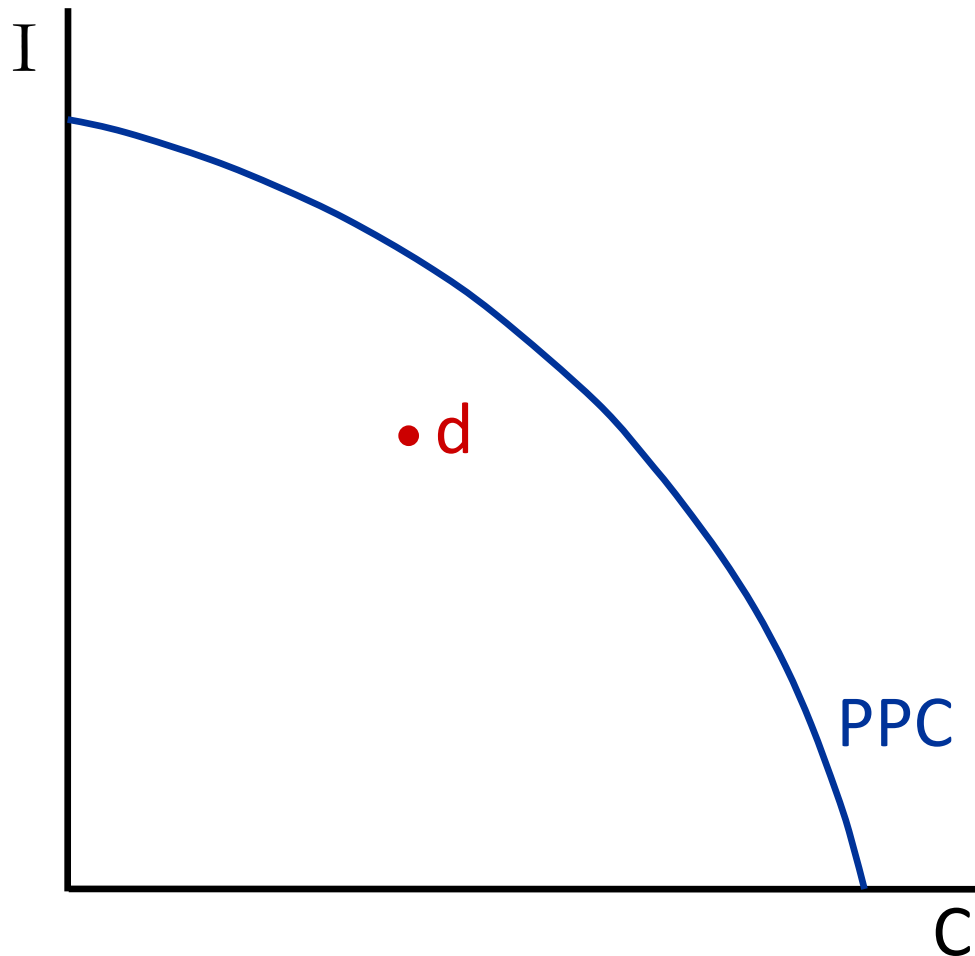
# PPC, Productive Efficiency and Recession

- **Productive efficiency** is when it is impossible to produce more of something without having to decrease the production of something else
- A **recession** is a time when unemployment is above normal and the economy is not producing at its full potential.
- Most recent example is COVID recession when a significant part of the economy shut down (such as restaurants) and many workers lost their jobs

## How Does a Recession Show up in the PPC Diagram?



## How Does a Recession Show up in the PPC Diagram?



At a point such as d, the economy is not producing all it is capable of.

## IV. SPECIALIZATION AND THE CURVATURE OF THE PRODUCTION POSSIBILITIES CURVE

# Two Fundamental Building Blocks

- Scarcity, choice, and opportunity cost.
- Comparative advantage and the gains from specialization.

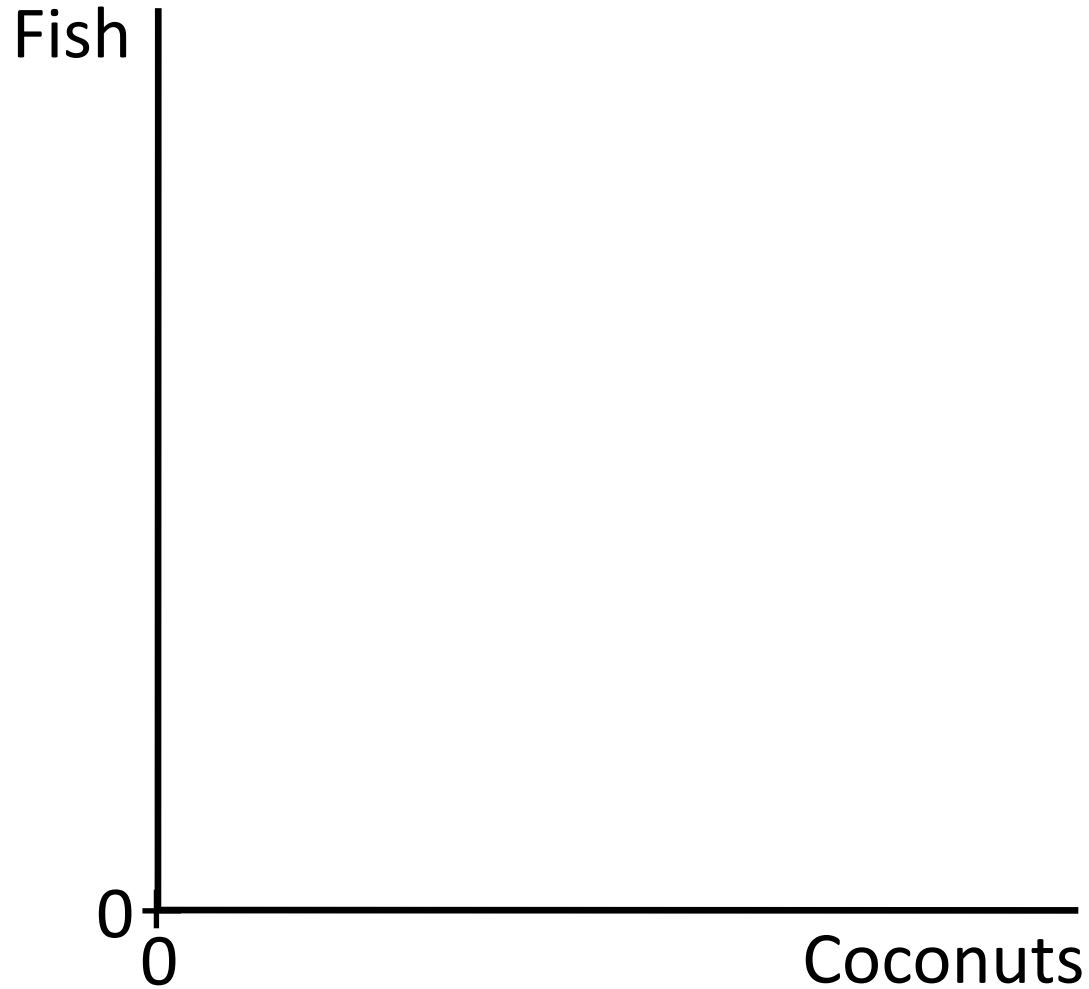
## Example: Specialization in a Two-Person Economy

- Two goods: fish and coconuts.
- Abilities:
  - In an hour, Bill can catch 1 fish or gather 1 coconut.
  - In an hour, Chris can catch 8 fish or gather 2 coconuts.
- Each of them works 10 hours a day.

# Production Possibilities Curve (PPC)

- Diagram showing the combinations of two types of goods that could be produced in an economy just using all of the available inputs.
- In this case, the two goods are fish and coconuts.
- We will draw the PPC for a day.
- Recall, the slope of the PPC is (minus) the opportunity cost of the good on the horizontal axis.

## Island PPC *without* Specialization

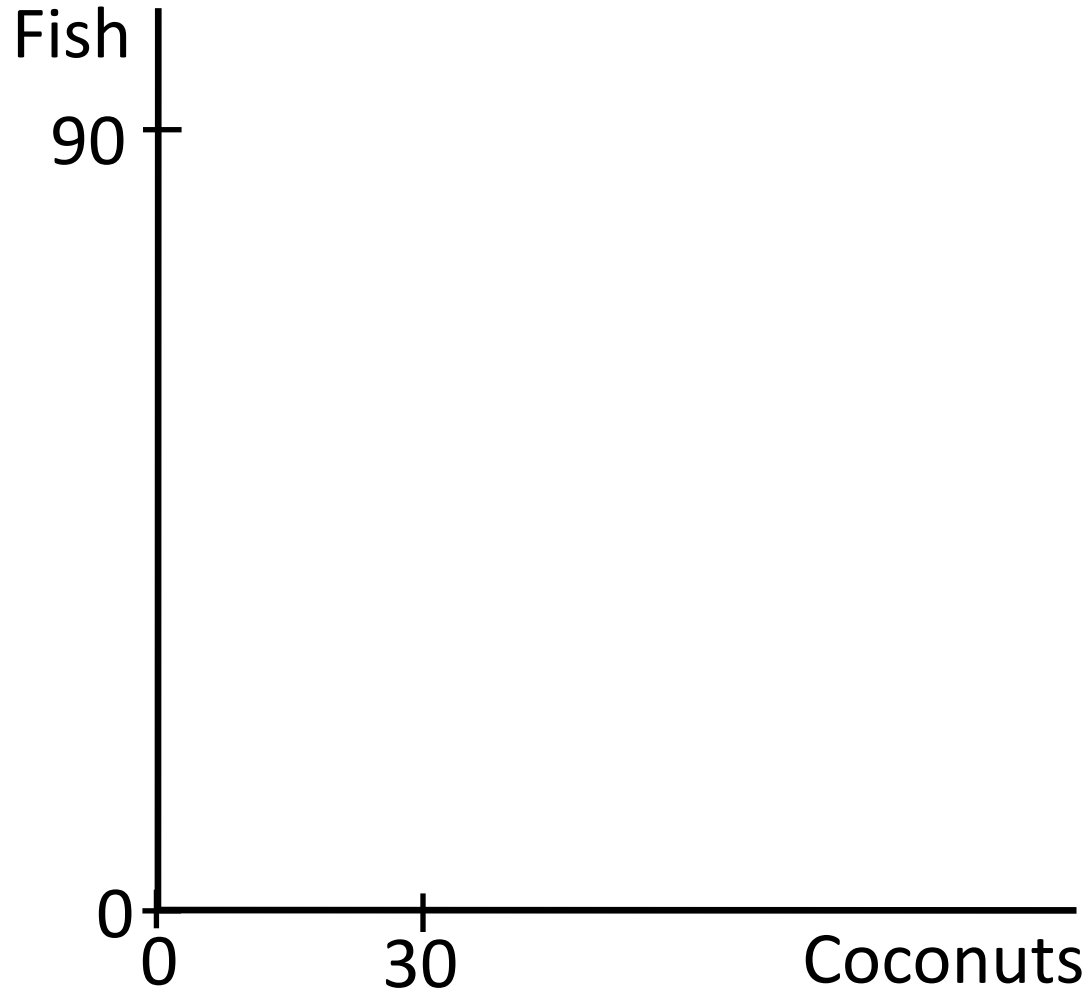




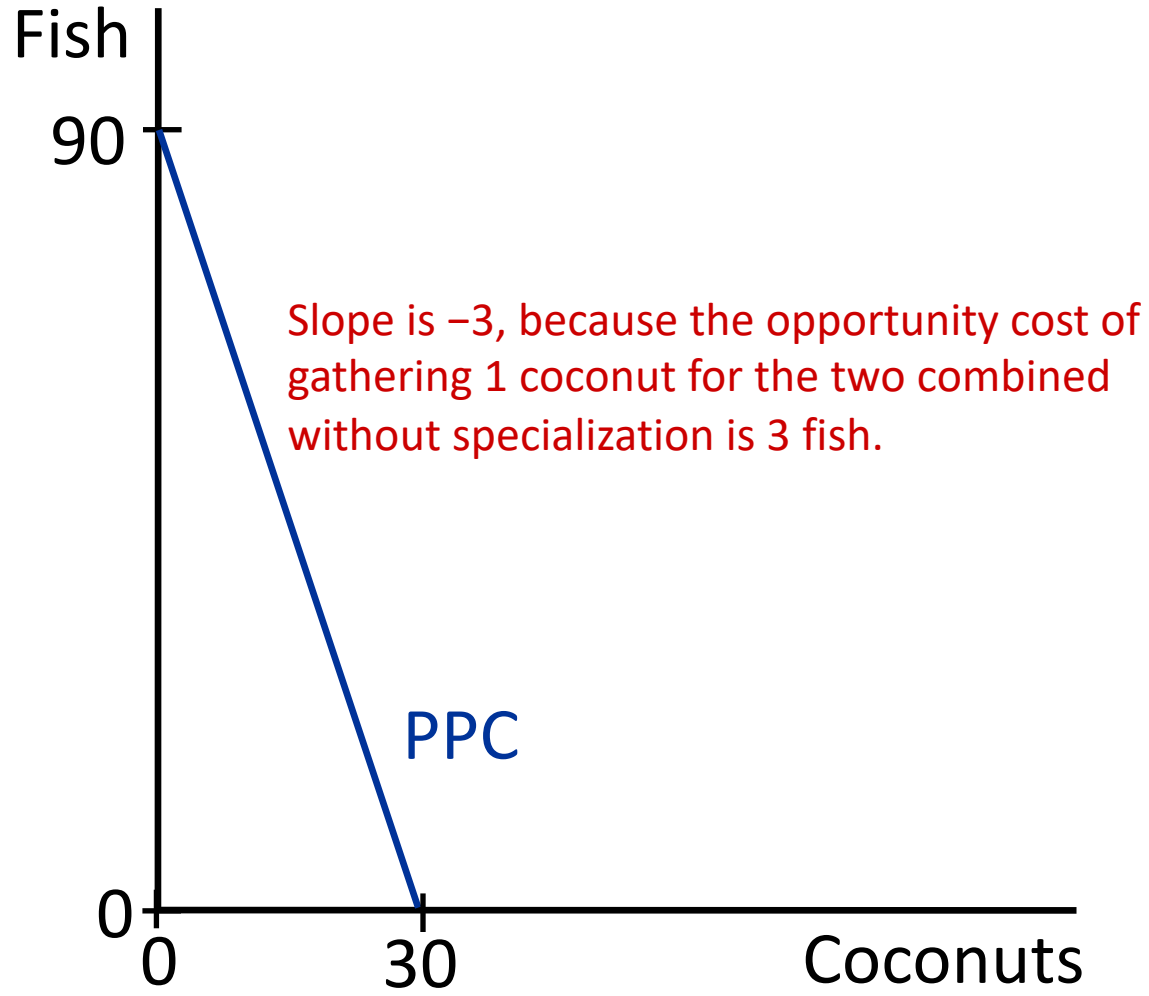
## Opportunity Cost When Chris and Bill Allocate Their Time the Same Way (No Specialization)

- In an hour, they could catch 9 fish (1 from Bill and 8 from Chris).
- Or they could gather 3 coconuts (1 from Bill and 2 from Chris).
- So, they trade off 9 fish for 3 coconuts.
- The opportunity cost of 1 coconut is 3 fish.

## Island PPC *without* Specialization



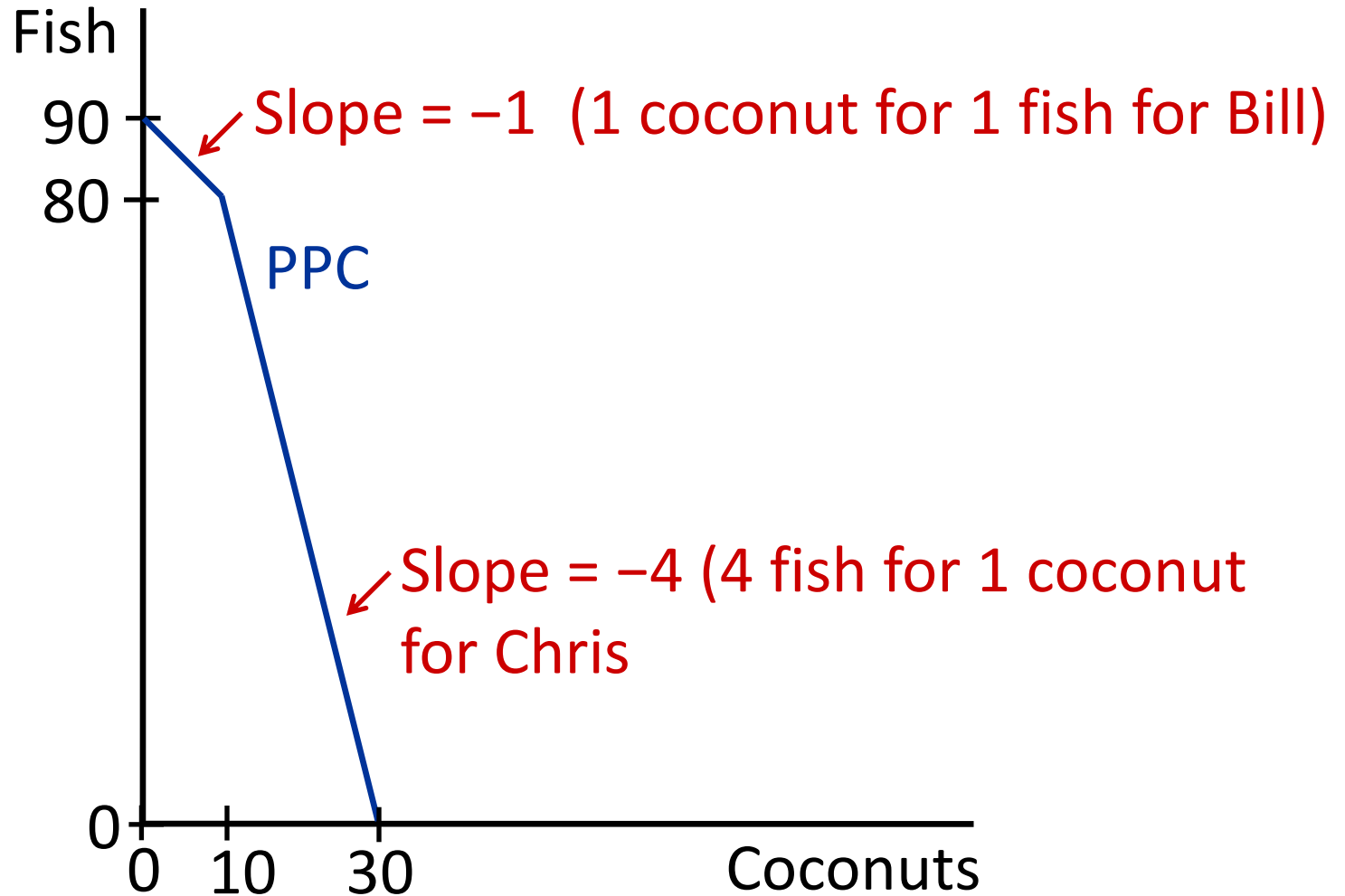
## Island PPC *without* Specialization



# Individual Abilities and Opportunity Costs

- In an hour, Bill could catch 1 fish or gather 1 coconut.
  - So, the opportunity cost of having Bill gather 1 coconut is 1 fish.
- In an hour, Chris could catch 8 fish or gather 2 coconuts.
  - So, the opportunity cost of having Chris gather 1 coconut is 4 fish.
- Bill is the low opportunity cost provider of coconuts = Bill has **comparative** advantage in coconuts

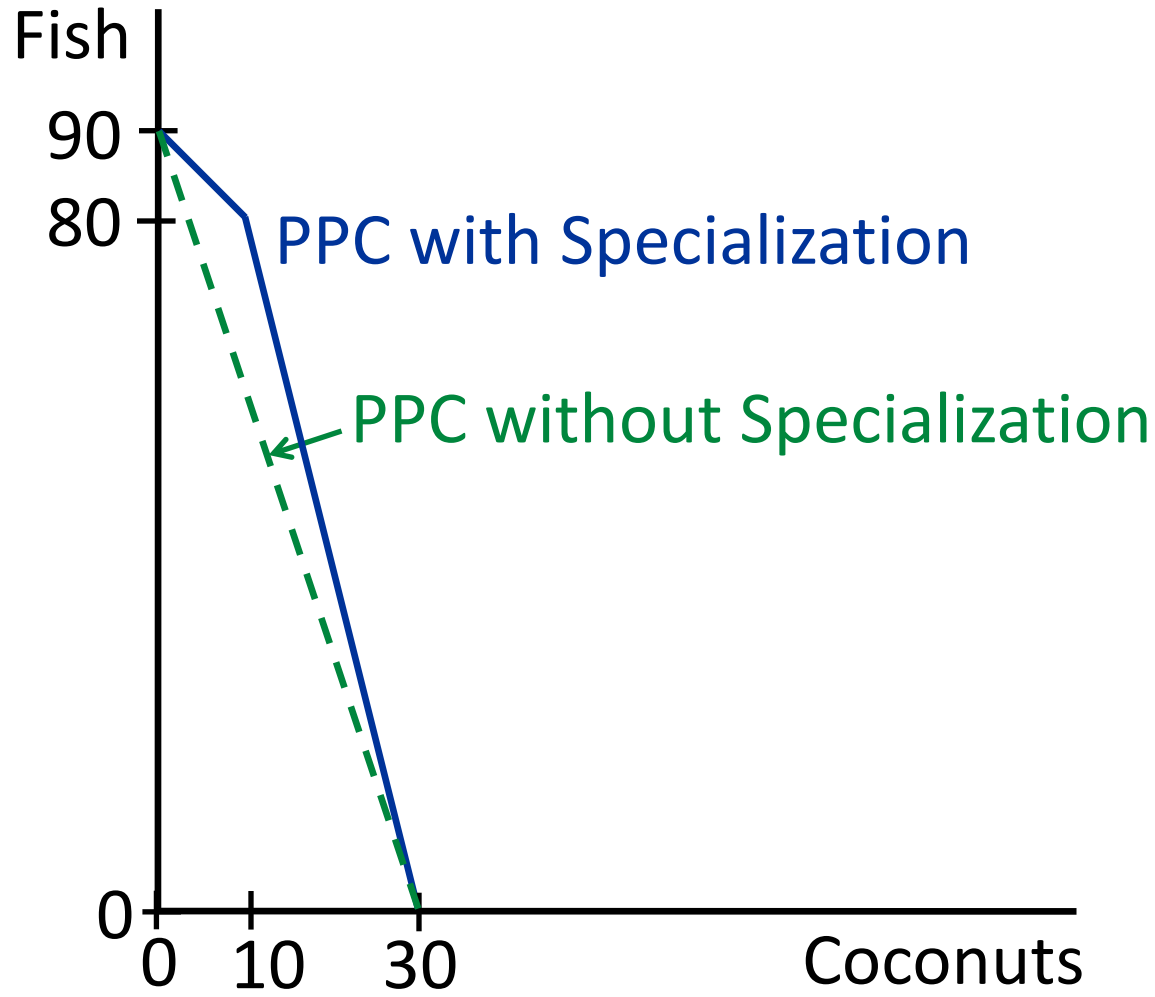
## Island PPC *with* Specialization



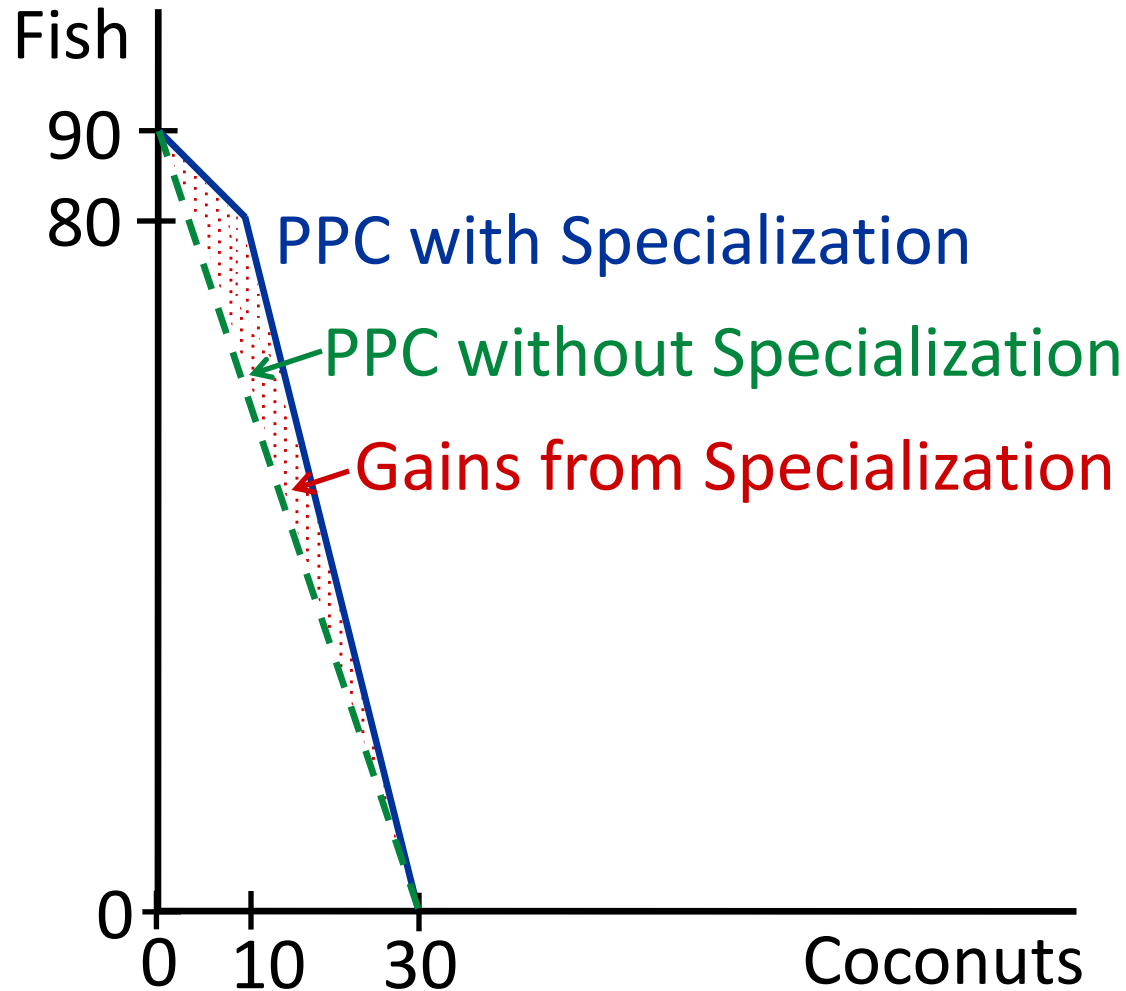
# What Do We Learn from this Example?

- There are gains from specialization when opportunity cost differs across producers and production is organized according to comparative advantage.

# Gains from Specialization



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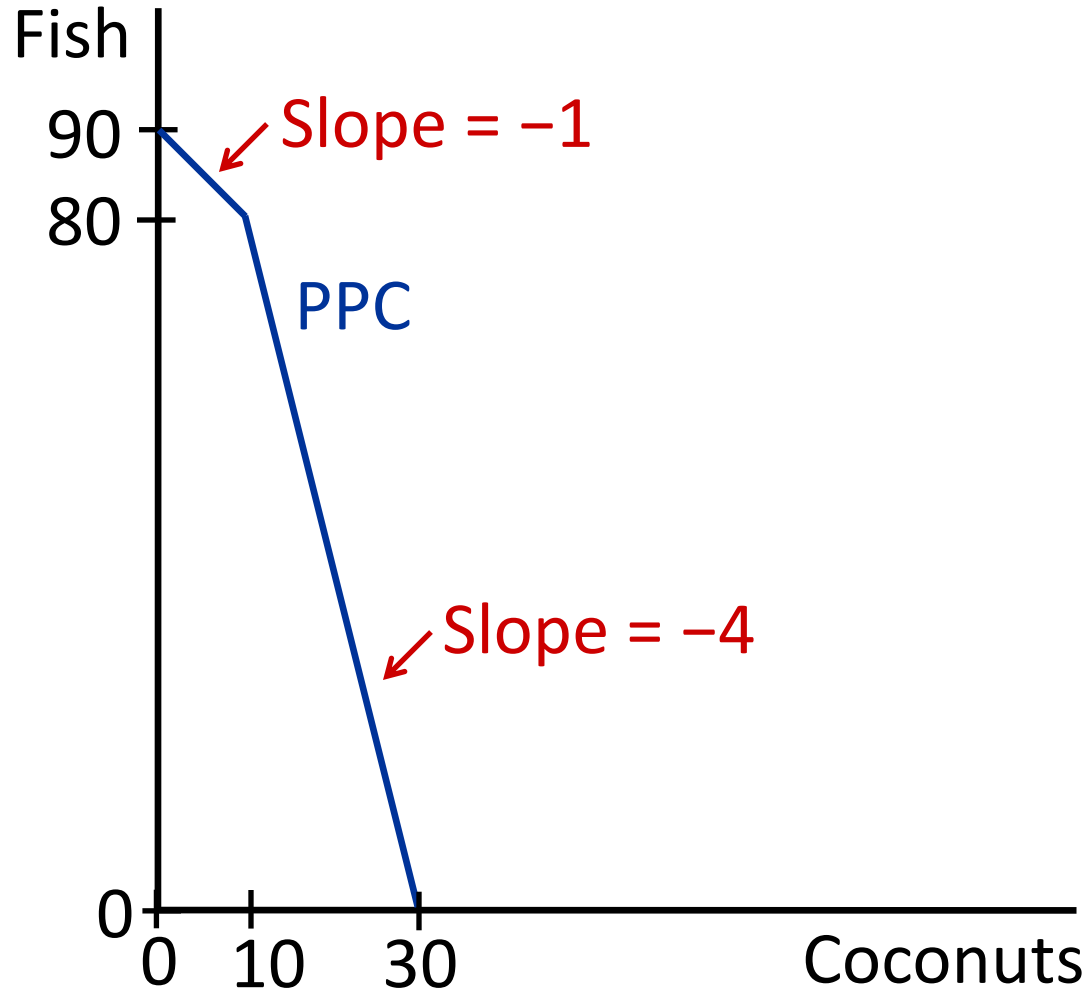




# What Do We Learn from this Example?

- There are gains from specialization when opportunity cost differs across producers and production is organized according to comparative advantage.
- This explains why the PPC for a country is likely to be bowed out.

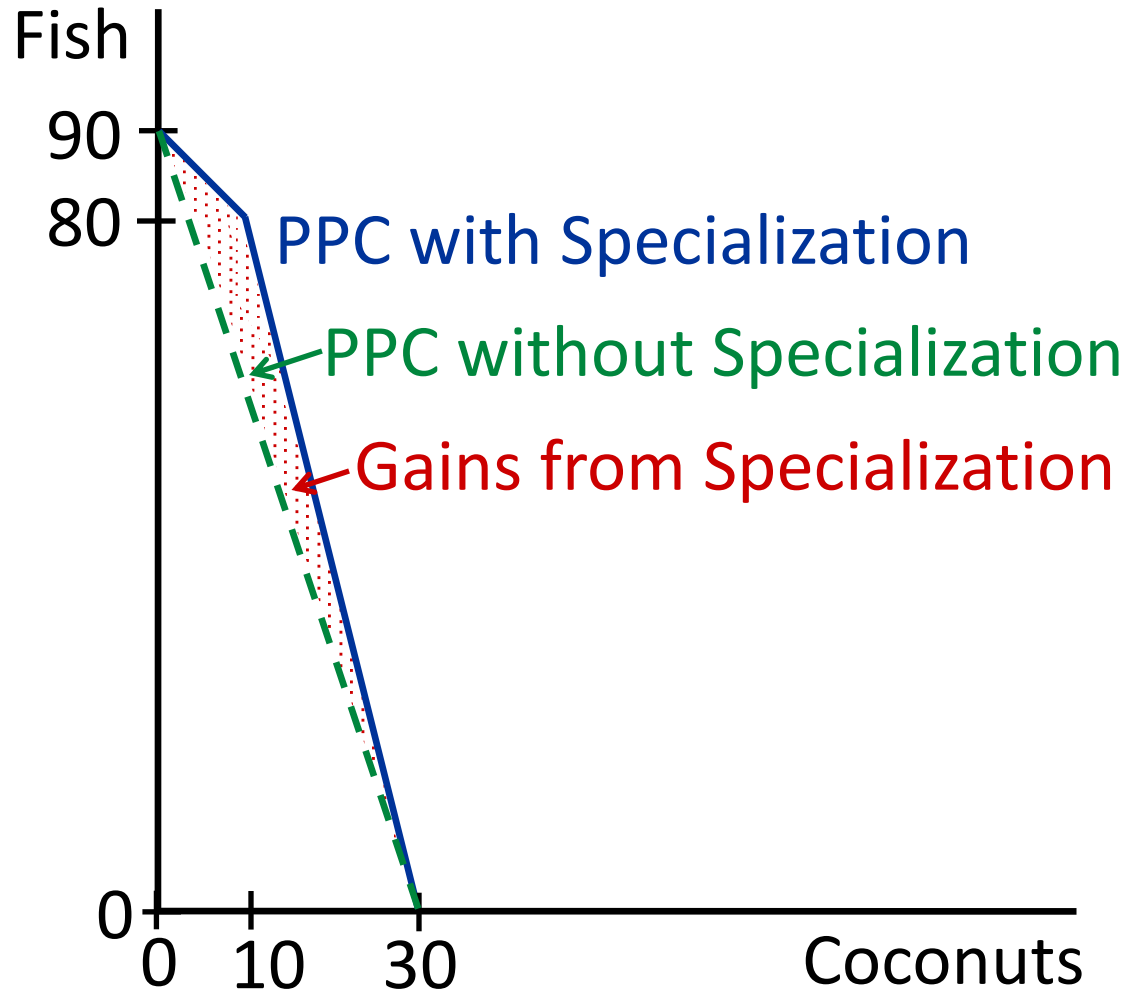
# Island PPC *with* Specialization



## What Do We Learn from this Example?

- There are gains from specialization when opportunity cost differs across producers and production is organized according to comparative advantage.
- This explains why the PPC for a country is likely to be bowed out.
- One determinant of the size of the gains from specialization is the difference in opportunity cost.

# Gains from Specialization



# Will Chris and Bill Both Benefit from Specialization?

- **Simple Answer:** As long as there is no coercion, if two parties choose to specialize and trade, both must be benefitting
- **More complicated answer:** In a market system, prices will tend to adjust to ensure that both parties gain from specialization and trade.

## Quiz:

Question: An economy's PPC is curved rather than linear because:

- A. There are trade offs
- B. There are only two goods
- C. There is specialization in production
- D. I don't know

# Implications of the Gains from Specialization

- It explains why we see trade at all levels.
- To have trade, we need markets.
- Comparative advantage most obvious for agricultural products where climate is crucial (e.g. coffee grows best in tropics) or natural resources (e.g., oil in Saudi Arabia)
- Comparative advantage in manufacturing often based on history (e.g. cars built in the US around Detroit) but this can change overtime (e.g., cars built in China today)

# Can there be too much specialization?

- **Individual level:** psychologically numbing to do very narrow tasks (e.g. assembly line).
- **Country level:** concerns about trade dependence:
  - National security (supply side chains breakdowns, trade wars, food sufficiency, military production)
  - Infant industries may need protection initially
  - Environmental protection laws differ between countries
  - Labor protection laws may differ between countries



# References

- CORE-The Economy 2.0, micro, [Unit 3](#).
- Principles of Economics, Chapter 2.