

# Scarcity and Production Possibilities

ECO 120: Global Macroeconomics

# Goals

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- 1 Define what is economics and goals of macroeconomics
- 2 Apply scarcity and production possibilities concepts to...
  - defining economics,
  - describing possibilities and tradeoffs in an economy, and
  - describe how economies and standards of living can grow.

# Reading and Exercises

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- Textbook: Introduction to Economics, Module 1
- Textbook: Production possibilities, Module 2
- "Makeshift Cuisinart Makes a Lot Possible in Impoverished Mali" by Roger Thurow, *The Wall Street Journal*, July 26, 2002. **Posted on Canvas**
- **Canvas Quiz due Wed 11:59 PM.**  
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
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# What is economics?

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- Economics is the study of the allocation of scarce resources.
- **Resource:** broadly defined as anything that is used in production or is consumed.
- **Scarcity:** a resource is considered scarce when there is not enough to satisfy everyone's wants at a zero price.
- Microeconomics (ECO 110) studies how individual consumers and producers make optimal choices with scarce resources.
- Macroeconomics studies how allocation of scarce resources determines the overall performance of an economy



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# Factors of production

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- **Factors of production:** scarce resources that are used in the production of goods.
- **Land:** any natural resource (such as land, forest, oil) that is used for production.
- **Labor:** time people spend employed in producing goods, as well as the physical and mental talents of people.
- **Capital:** physically manufactured goods used in the production of other goods and services. Eg. buildings for businesses, factories, machines, computers, dump trucks, etc.
  - The process of producing or purchasing new capital goods is called **investment**.
- **Human capital:** Skills, knowledge, and mental talents of people used in production of goods and services

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# Production Possibilities Frontier

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- Many of the same factors of production can be traded between productions of alternative goods.
- Factors of production are scarce.
- Production possibilities: trade-off when producing two or more different goods.
- Starting assumptions:
  - Full employment and efficient use of all resources
  - Single period in time → fixed resources and fixed technology
  - Two goods. Not essential, just makes it easy to draw

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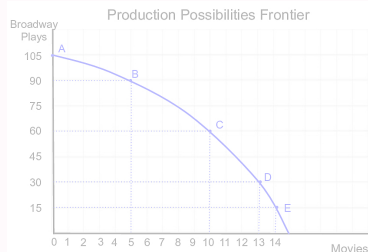


# Production Possibilities Example

**Production Possibilities Table**

Point	Broadway Plays	Movies
A	105	0
B	90	5
C	60	10
D	30	13
E	15	14

**Production Possibilities Frontier**



Why the tradeoff? Factors of production are scarce!

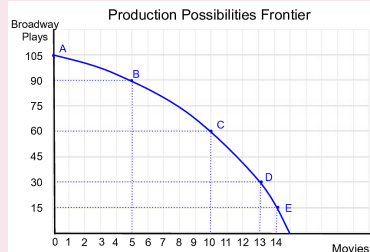
To produce more movies, move workers, building space, set designs, etc. away from making plays to make movies instead.

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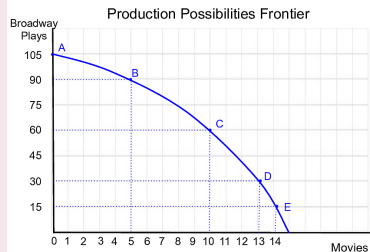
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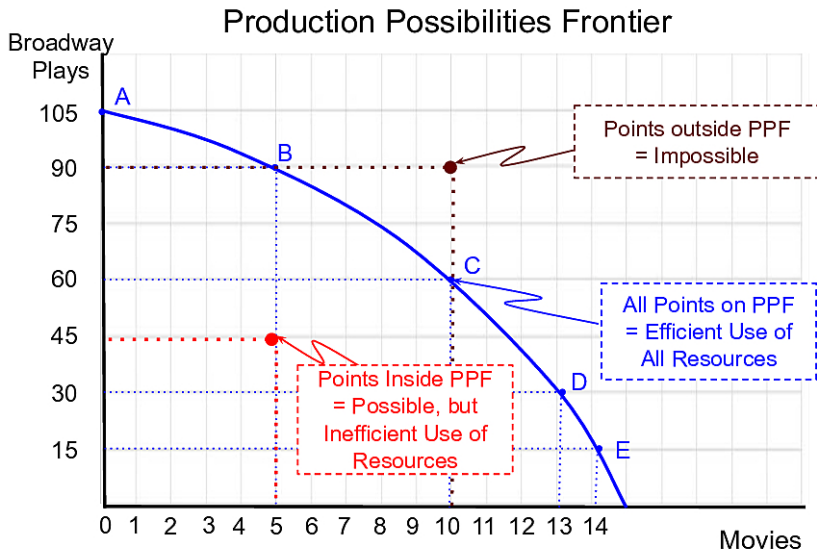
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# Efficiency, Possibilities, and Impossibilities



# Opportunity costs

## Opportunity Cost

Quantity of production of one good that must be given up to produce *one additional unit* of another good.

## Formula

$$\text{Op Cost of Movies} = \frac{\text{Qty of Plays Given Up}}{\text{Qty of Movies Gained}}$$

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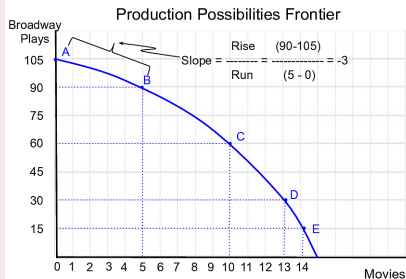
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# Opportunity Cost and Slope of PPF

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## Production Possibilities Frontier



## Opportunity Cost of Movies

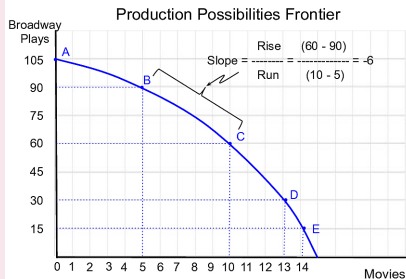
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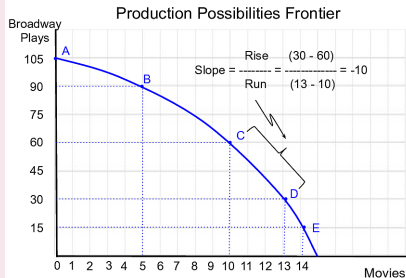
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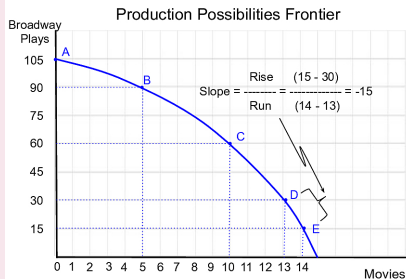


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# Relationship between PPFs and Opportunity Costs

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## Relationship

- The absolute value of the slope of the PPF = opportunity cost of good on horizontal axis
- Bowed-out shape (steeper slope as  $x$  increases)  $\rightarrow$  increasing opportunity cost

## Law of Increasing Opportunity Costs

- As production of one good increases, the opportunity cost of producing that good increases
- It holds for **both the x-variable good and the y-variable good.**

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# Future PPFs: Economic Growth

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## Factors Affecting PPF

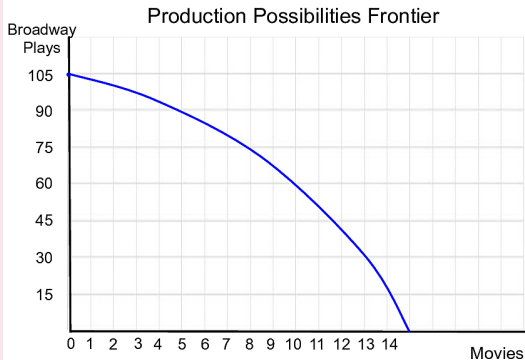
More of everything is possible:

- New technologies
- New production methods
- Discovery of new resources
- More human capital

## Impact

PPF shifts outward

## Shift Outward



# Future PPFs: Economic Growth

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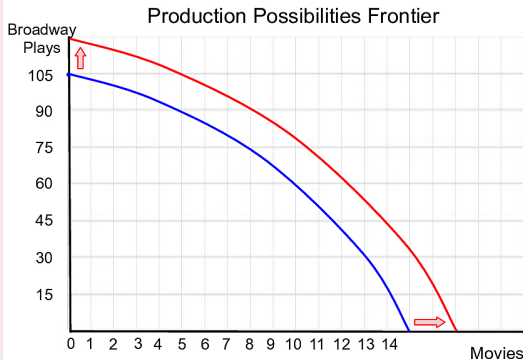
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# Future PPFs: Industry-Specific Economic Growth

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New technologies can be specific to one good.

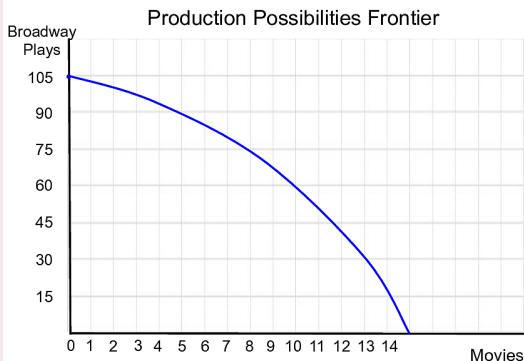
Example:

Advances in CGI (Computer-generated imagery) affects movie production but not Broadway plays.

## Impact

PPF shifts outward at one axis only

## Shift Outward at One Axis Only





# Future PPFs: Industry-Specific Economic Growth

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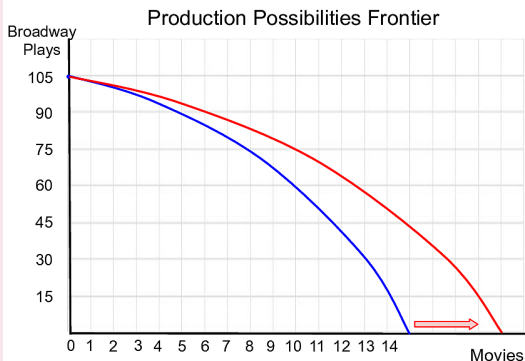
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# Future PPFs: Economic Contractions

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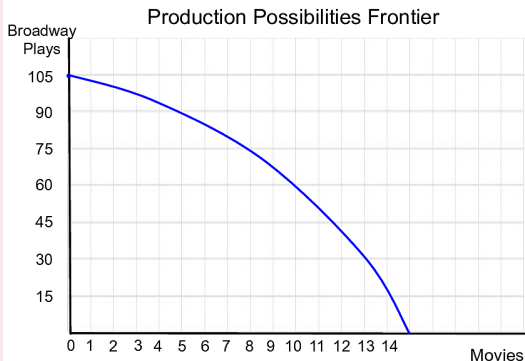
## Factor Affecting PPF

Destruction of resources from war and natural disasters makes less of everything possible

## Impact

PPF shifts inward

## Shift Inward



# Future PPFs: Economic Contractions

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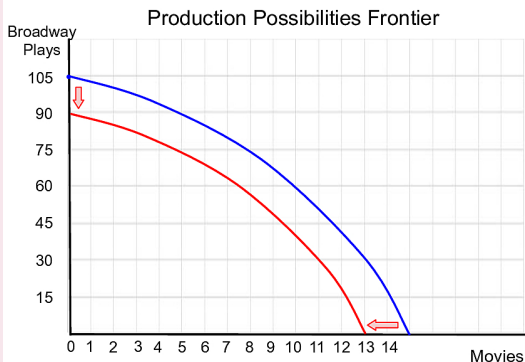
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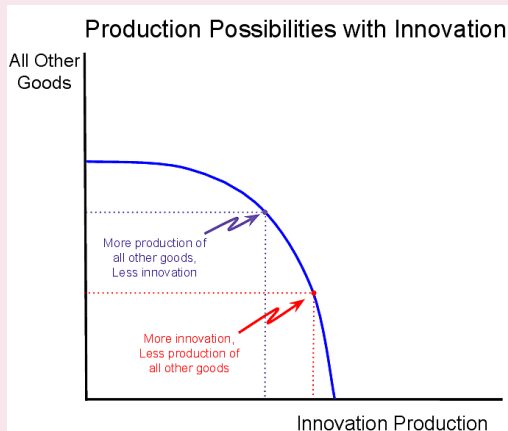


# Innovation

## Innovation Production

- Improvements in technology don't just happen
- Innovation production: Research and development to create new inventions, new knowledge
- Innovation production requires scarce resources

## Shifts with Innovation Production

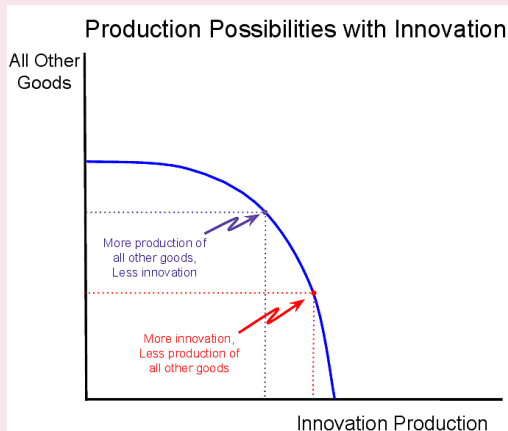


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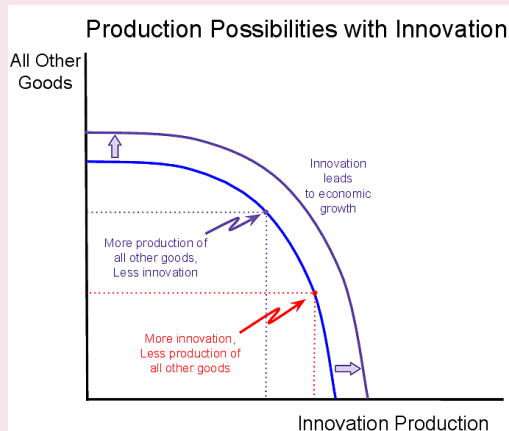
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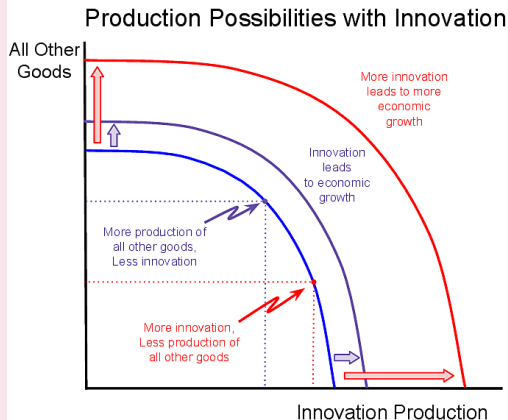
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# Scholar Spotlight: Lisa Cook & Nela Richardson

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## Can addressing inequality unleash economic growth?

*Business Economics*, Spring 2021.

### Inequality and Innovation

- U.S. Patent Data: 1870-2010
- Unequal access to innovation 1870-1960 led to negative outcomes for affected individuals and the overall U.S. economy
- Improved access 1960-2010 accounts for 25% of growth in U.S.
- Still work to be done to get a better representation of women and minorities in innovation



**Dr. Lisa Cook** (left)  
Federal Reserve Board of Governors  
Professor, Michigan State University



**Dr. Nela Richardson** (right)  
Chief Economist, ADP Research



## Tasks This Week

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