Scarcity and Production Possibilities

Economics 120: Global Macroeconomics

Goals and Learning Objectives

- Goals:
  - Understand definition and goal of macroeconomics.
  - Understand scarcity and production possibilities.
- Learning Objectives
  - Learning Outcome (LO) 1: Apply the model of the production possibilities curve to illustrate the concepts of scarcity, choice, opportunity cost, and economic growth.
  - General Education Learning Outcome (GELO) 1: Students will be able to use mathematical and logical methods to solve problems.

Relevant Reading

- Introduction to Economics: Module 1
- Production possibilities: Module 3

What is economics?

- 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 agents in the economy (consumers or producers) make choices with scarce resources.
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Tenets of Economics Thinking

- We (often) assume people are "rational".
  - People have some defined objective. Eg. maximize profits, maximize enjoyment from consumption (utility).
  - People make the best decision with the information they have available.
- People respond to incentives.
- It is useful to think about optimal decisions at the *margin*.
  - What is the *additional* revenue from producing *one additional* unit of a good?
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Factors of production

- 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.
- **Capital**: equipment or machinery used in production of goods.
  - The process of producing or purchasing new capital goods is called **investment**.
- **Labor**: time people spend employed in producing goods, as well as the physical and mental talents of people.
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Types of Efficiency

- **Productive Efficiency:** a good is produced at the lowest possible cost.
- **Allocative Efficiency:** the economy is using its scarce factors of production to produce the most of what its people want to consume.
  - This takes into account impact of current decisions on future production possibilities.
  - "Want to consume" is a broad term that can include things like enjoyment of a clean environment, protection of the world's species, etc.
- **Pareto Efficiency (aka Pareto optimal):**
  - When no one else can be made better off without making someone worse off.
  - This is a weak measure of efficiency.
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Production possibilities

- 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.
- Assumptions:
  - Full employment and efficient use of all resources.
  - Single period in time $\rightarrow$ fixed resources and fixed technology.
  - Two goods. Not an essential assumption, just makes it easy to draw.

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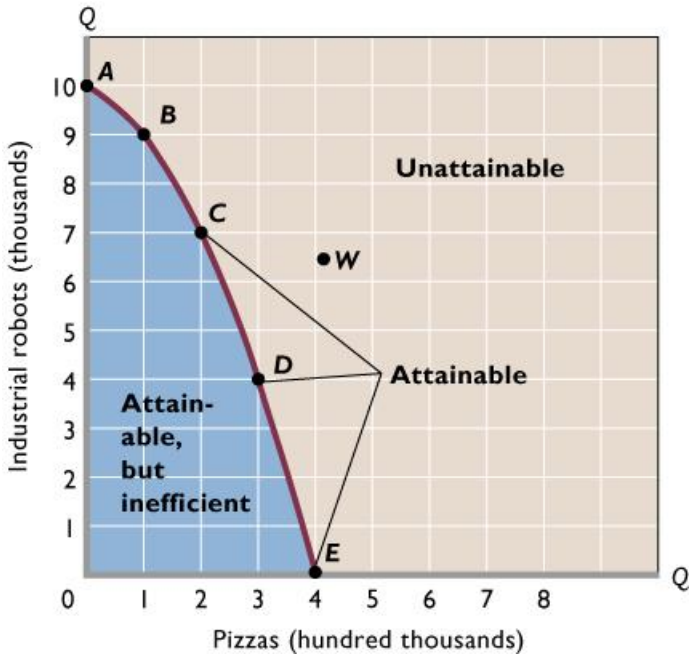
Production possibilities

TABLE 2.1

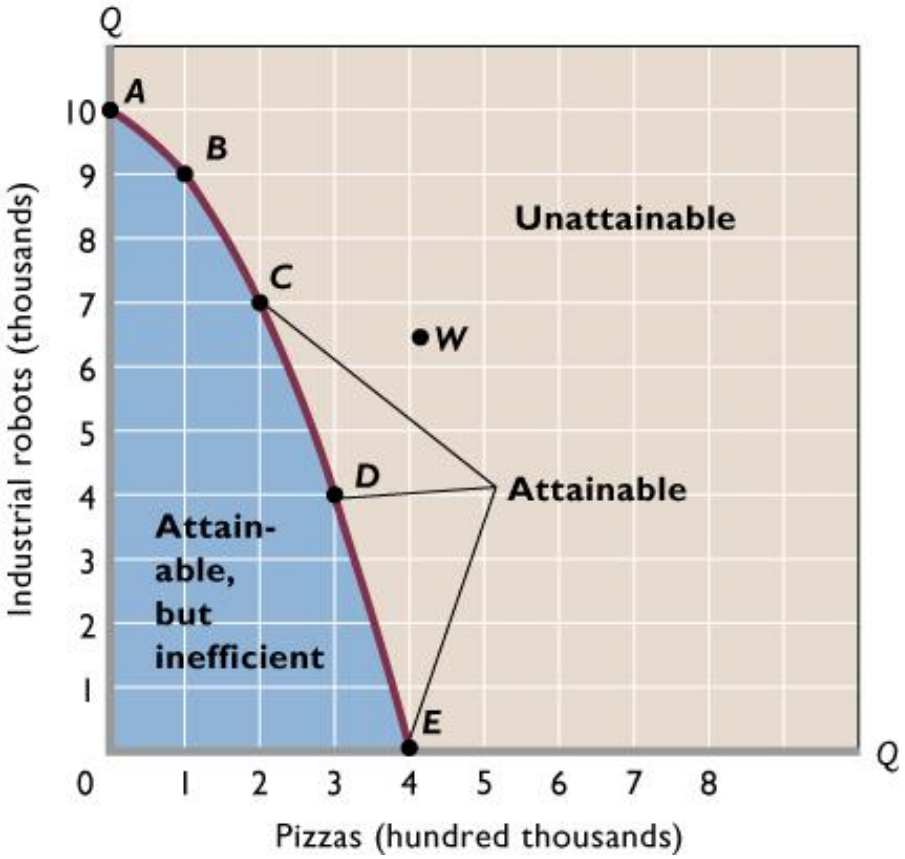
Production Possibilities of Pizzas and Robots with Full Employment and Productive Efficiency

	Production Alternatives				
Type of Product	A	B	C	D	E
Pizzas (in hundred thousands)	0	1	2	3	4
Robots (in thousands)	10	9	7	4	0



- Production possibilities table: pairs of quantities of two goods that can be produced.
- Production possibilities frontier: graph of production possibilities.

Opportunity costs



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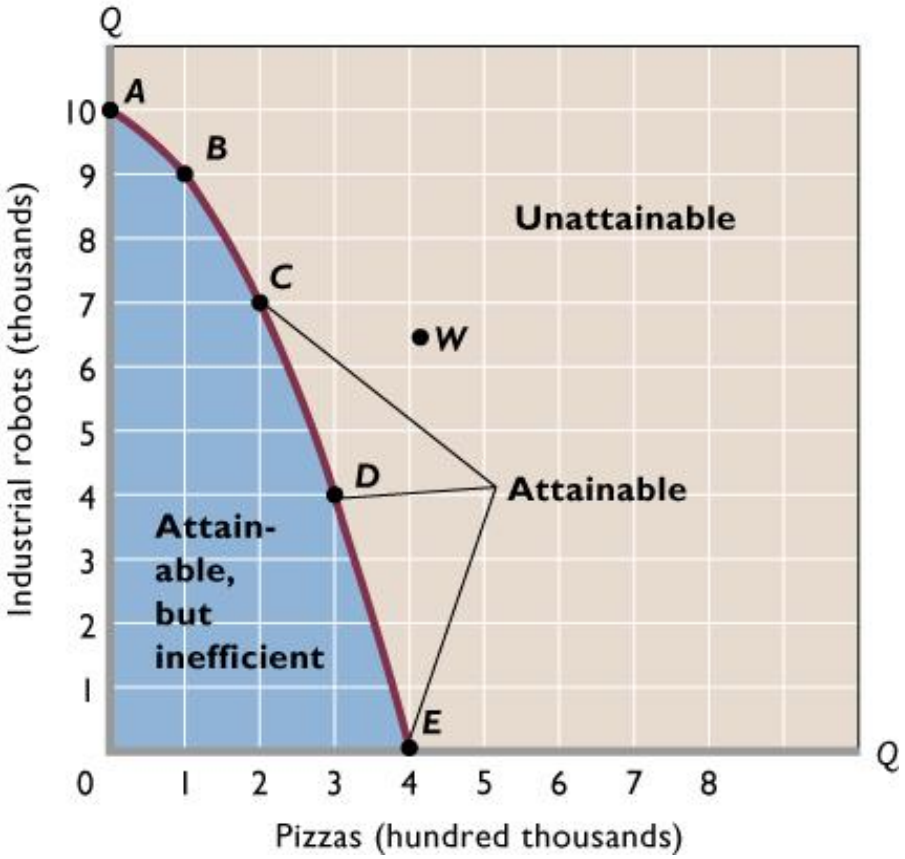

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Future PPFs

- If technology or quantity of resources change, the PPF will shift.
- Improvement in technology.
  - Shift PPF outwards.
  - Changes in technology can also change opportunity cost (and therefore the slope).
- Discovery of oil.
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- Destruction of resources (eg: natural disasters, war).
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Example

- Suppose Florida can produce the following combinations of Oranges and Grape Jelly if it uses all its resources efficiently:

Oranges	Jelly
0	30
2	28
4	24
6	18
8	10
10	0

- Graph the PPF. Label what is possible, but inefficient, efficient, and not possible.
- Does is bow outward, inward, or is it a straight line?

Example continued

- What is the opportunity cost of Oranges at each given level?
- What is the opportunity cost of grape jelly at each given level?
- Is the movement of opportunity costs consistent with the shape?
- Show what would happen if there was an excellent farming season that made all fruit crops very productive.
- Show what would happen if there was an overnight freeze that destroyed many orange crops.
  - Would Florida produce less oranges?
  - Would Florida produce less grape jelly?

Coming up...

- Read 2002 WSJ Article: "Makeshift Cuisinart Makes a Lot Possible in Impoverished Mali".
- Next topic: Supply and Demand
  - Learn how agents in an economy collectively "decide" how much of a good to produce, and how prices are determined.
  - Reading: Modules 5, 6, and 7.