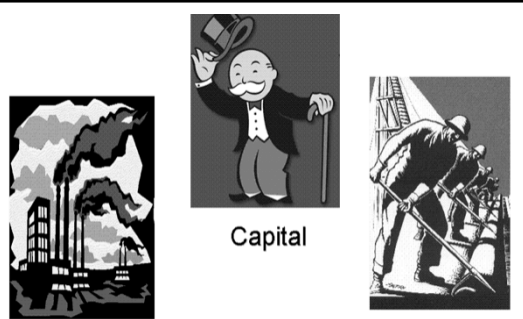


Production Possibilities Curve
Coach Burnett

Resources: The Factors of Production


- Economists classify resources into 4 categories
 1. Land
 - Natural Resources
 - The payment for the land is RENT
 2. Labor
 - Human resources
 - The payment for labor is WAGES
 3. Capital (a product of Investment)
 - Tools, Machines, Factories
 - The payment for Capital is INTEREST
 4. Entrepreneurship
 - The special ability of risk-takers to combine land, labor and capital in new ways in order to make profit
 - The payment for Entrepreneurship is PROFIT



Land **Capital** **Labor**

The Fundamental Problem of Economics: **Scarcity**

- People have unlimited wants, but the resources to satisfy those wants are SCARCE.
- Therefore, we must make choices about how to use out scarce resources. We face trade-off when it comes to using available resources.
- Example:
 - Assume flour is a scarce resource:
 - 3 cups of flour can be used to make a loaf of bread or a cake, but the 3 cups cannot be used to make both.




The Fundamental Problem of Economics: **Scarcity**



OR

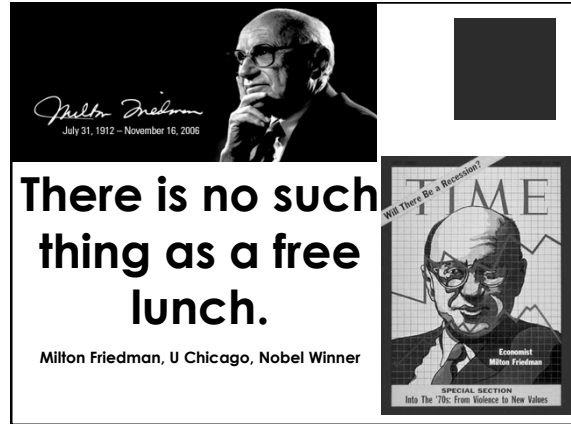
What is your cost?

- Every decision has an **opportunity cost** – the cost in foregone opportunities.
- Once a resource or factor of production has been put into use, an opportunity cost has incurred.
- Opportunity cost is the next best alternative use for a resource.
- Example:
 - If the 3 cups of flour are used to bake bread, then the opportunity cost is the cake that could also have been baked with the three cups of flour.



Opportunity Cost

■ **No matter what we do with out time or resources, we ALWAYS incur opportunity cost!!!!**



Milton Friedman
July 31, 1912 – November 16, 2006

There is no such thing as a free lunch.

Milton Friedman, U Chicago, Nobel Winner

Will There Be a Recession?
TIME
Economist Milton Friedman
SPECIAL SECTION
Into The '70s From Violence to New Values

Everything has a cost.



Production Possibilities

CONFIDENTIAL

Three Brazilian Soldiers



Donald Rumsfeld briefed the President this morning. He told Bush that Three Brazilian soldiers were killed in Iraq. To everyone's amazement, all of the color ran from Bush's face, then he collapsed onto his desk, head in hands, visibly shaken, almost whimpering. Finally, he composed himself and asked Rumsfeld, "Just exactly how many is a brazillion?"

When faced with SCARCITY of resources, decisions have to be made about how to use these resources

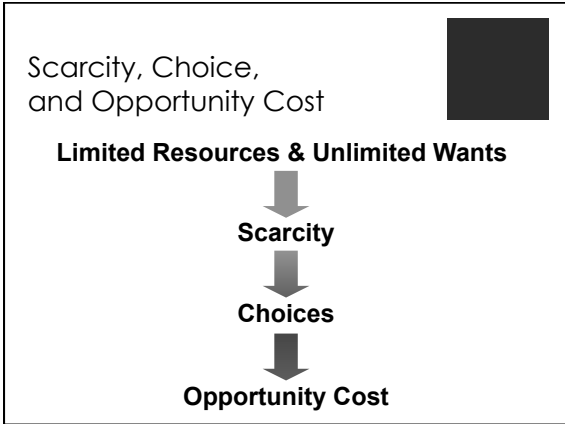
Trade-Offs
Opportunity Costs

Trade-Offs

This is the decision making process that is occurring in your mind right now!

- Am I going to pay attention to what Coach Felder is saying, or am I going to daydream?
- Am I going to come to class or go buy a lottery ticket?
- Am I going to stay in school or go find a full time job?
- **Each and every decision you make has a cost!! Not necessarily a cost in dollar terms, but a cost in that you must give up something in order to get more of something else.**





Scarcity and Choice for the Economy as a Whole

Movies	Computers
0	25,000
100	24,000
200	22,000
300	18,000
400	13,000
500	0

- Consumption vs. Investment
- Opportunity cost of producing 200 movies instead of 100 movies is 2,000 computers
- OC of making 300 movies instead of 200 movies is 4,000 computers
- OC of making 400 movies instead of 300 is 5,000 computers
- OC of making 500 movies instead of 400 is 13,000 computers

Production Possibilities

Movies	Computers
0	25,000
100	24,000
200	22,000
300	18,000
400	13,000
500	0

- Because OC continues to go up as we make more movies, it is called **INCREASING** opportunity cost

How to represent opportunity cost?

- The production possibilities curve (PPC) represents all possible maximum combinations of total output that could be produced.

PPC – Studying

Expected Grade in Mathematics

Expected Grade in Economics

12 hours study time per week

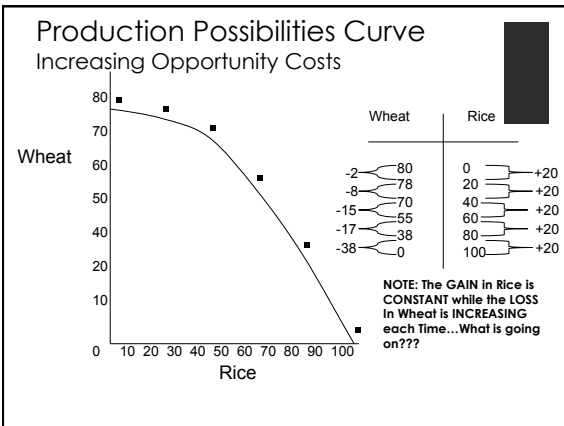
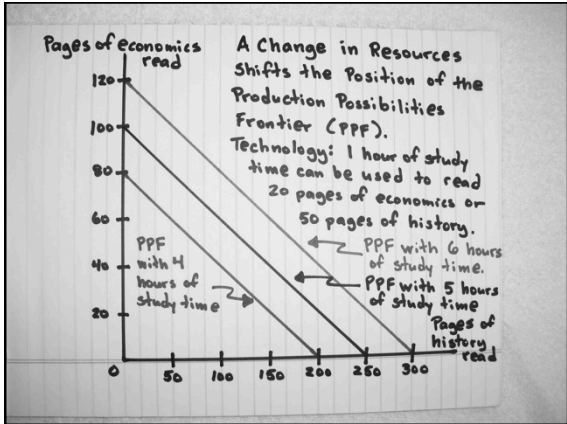
- All 12 hours spent on mathematics (Point A)
- 9 hours on mathematics, 3 hours on economics (Point B)
- 6 hours on mathematics, 6 hours on economics (Point C)
- 3 hours on mathematics, 9 hours on economics (Point D)
- All 12 hours spent on economics (Point A)

The Choices Society Faces

- Production possibilities assumptions
 - Resources are fully employed
 - Production takes place over a specific time period
 - Resources are fixed for the time period
 - Technology does not change over the time period

Production Possibilities Curve (PPC)

- What would happen to the production possibilities curve if you spent more time studying?
 - Let's say instead of 12, you had 20 hours to study
- What would happen to your potential grades?
- What if the subjects overlapped like English and History or Speech?



Production Possibilities Curve Increasing Opportunity Costs

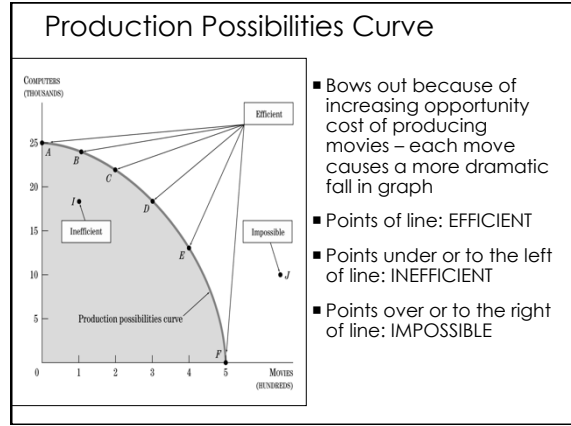
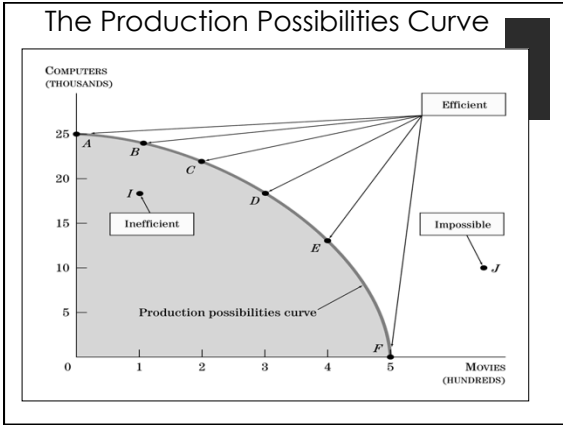
- The type of land resource suitable for growing Wheat is **DIFFERENT** than the land resource for growing Rice.
- If a society wants **MORE** Rice, then as you convert land suitable for growing Wheat (arable, relatively dry) so that you can grow Rice (wet, swampy) it will become **MORE** costly to do that, in terms of Wheat production
- We have **INCREASING OPPORTUNITY COSTS** of producing Rice in terms of Wheat

Production Possibilities Curve

- Economy's produce MORE than just Wheat and Rice.
- We produce LOTS of goods of many different types.
- We can broadly categorize goods into TWO categories
 - Capital Goods and Consumer Goods

The best way to illustrate Trade-Offs and Opportunity Costs is to use a Production Possibilities Curve

- The PPC shows the relationship between two goods:
 - Capital Goods (Investment Goods)
 - Goods that satisfy our wants **INDIRECTLY** and promote future growth or "happiness"
 - Delayed gratification
 - Consumer Goods
 - Goods that satisfy our wants **DIRECTLY**
 - Instant gratification



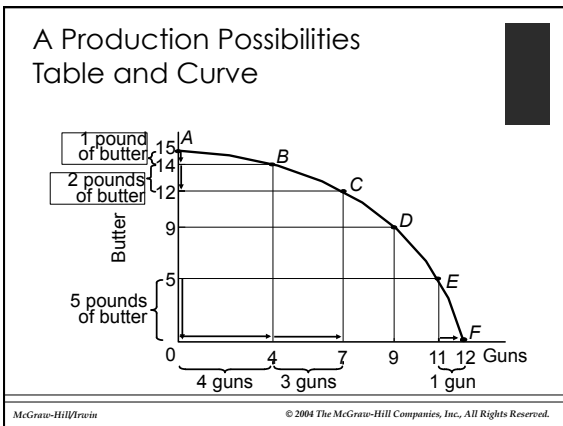
The Production Possibility Table

- **Output** – an output is simply a result of an activity.
- **Input** – an input is what you put into a production process to achieve an output.

A Production Possibilities Table and Curve

% of resources devoted to production of guns	Number of guns	% of resources devoted to production of butter	Pounds of butter	Row
0	0	100	15	A
20	4	80	14	B
40	7	60	12	C
60	9	40	9	D
80	11	20	5	E
100	12	0	0	F

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WHAT???

- Why is the production possibility curve not a straight line?

Increasing Marginal Opportunity Cost

- The **principle of increasing marginal opportunity cost** states that opportunity costs increase the more you concentrate on an activity.
- In order to get more of something, one must give up ever-increasing quantities of something else.

Efficiency

- In production, we'd like to have **productive efficiency** – achieving as much output as possible from a given amount of inputs or resources.

Efficiency

- A point along the line when everyone is employed and all resources are used correctly.
- Involves achieving a goal as cheaply as possible.

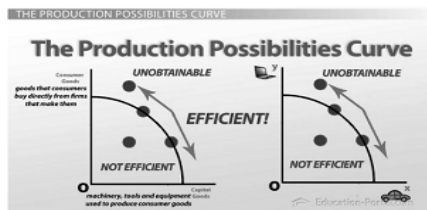


Efficiency

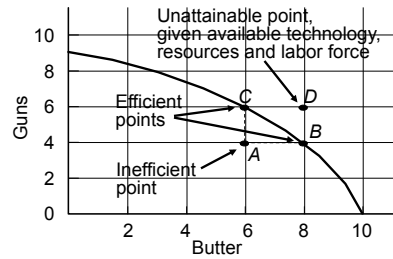
- Any point within the production possibility curve represents inefficiency.
- **Inefficiency** – getting less output from inputs which, if devoted to some other activity, would produce more output.

Efficiency

- Any point outside the production possibility curve represents something unattainable, given present resources and technology.




Efficiency and Inefficiency



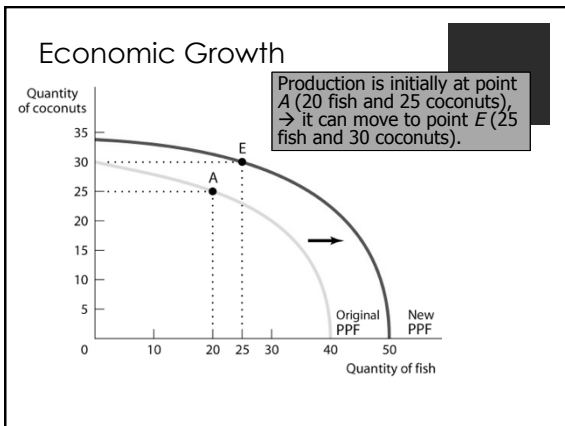
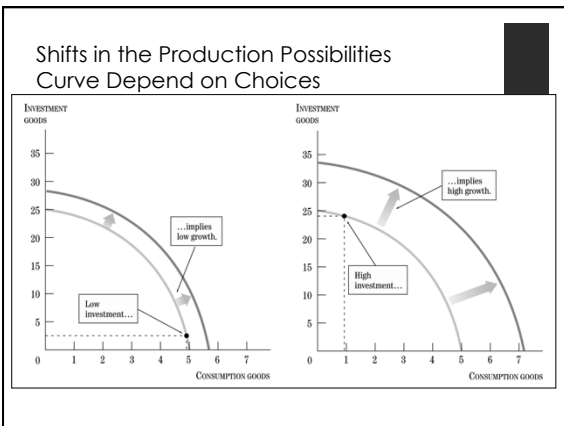
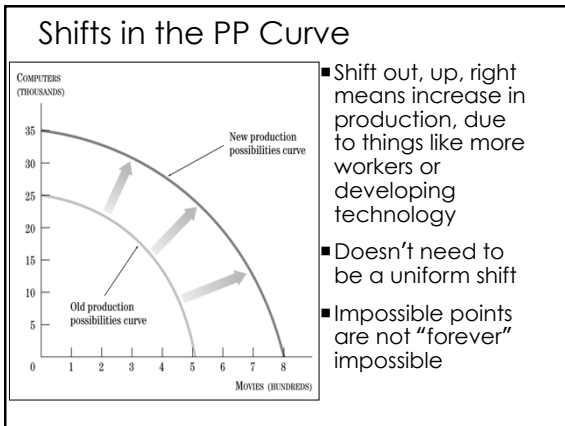
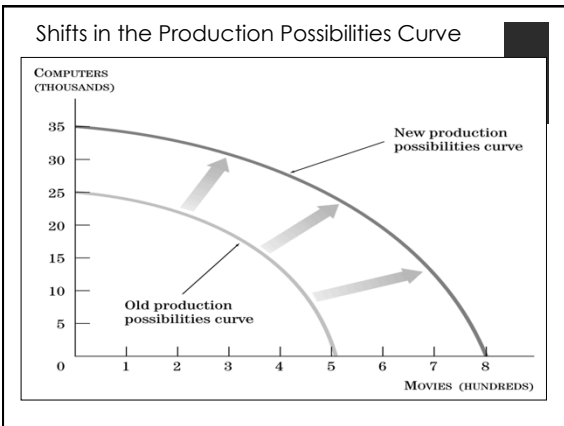
More?

- Can we produce outside the production possibility curve?
- Can we have more?



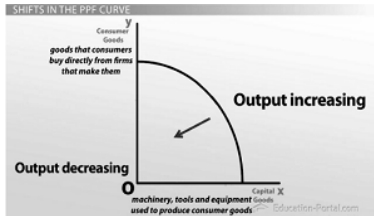
Shifts in the Production Possibility Curve

- Society can produce more output if:
 - Technology is improved.
 - More resources are discovered.
 - Economic institutions get better at fulfilling our wants.

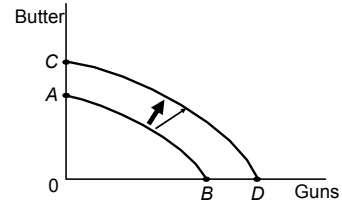
Shifts in the Production Possibility Curve

- More output is represented by an outward shift in the production possibility curve.



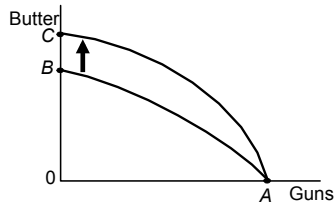
Shifts in the Production Possibility Curve

Neutral Technological Change



Shifts in the Production Possibility Curve

Biased Technological Change



Examples of Shifts in the Production Possibility Curve

- Test your understanding:
 - A meteor hits the world and destroys half the earth's natural resources.
 - Nanotechnology is perfected that lowers the cost of manufactured goods.

Examples of Shifts in the Production Possibility Curve

- Test your understanding
 - A new technology is discovered that doubles the speed at which all goods can be produced.
 - Global warming increases the cost of producing agricultural goods.