L02

Trade-offs and Comparative Advantage
Introduction

- Economy is complex

- Simplify by using a model
A model of production called **Production Possibilities Frontier**

Helps to see:
- **Scarcity**
- **Opportunity Cost**
- **Productive Efficiency**
Learning Objectives

• Understand Definition of PPF
• Understand how the economic principles of scarcity, opportunity cost, and productive efficiency are incorporated into the graph
• **Production Possibility Frontier**: A curve measuring the maximum combination of outputs that can be obtained from a given number of inputs
  ◦ Outputs
  ◦ Inputs
  ◦ Maximum
Example – Airbook vs. iPod
Example – Airbook vs. iPod

- Scarcity
- Opportunity Cost / Trade off
- Efficiency – getting as much output from given inputs as possible
- Inefficient use of inputs

**Graph:**
- **Airbook per unit time:**
  - Point a
  - Point b
  - Point c
  - Point g
- **iPod per unit time:**
  - Point d
  - Point e
  - Point f

**PPF:**
- Production Possibility Frontier
Example – Socializing and Studying

Socializing

Studying
Example – Socializing and Studying

What would cause you to be able to produce more studying?
Example – Socializing and Studying

What Would Cause an Expansion for Socialization?
What would cause a simultaneous expansion for studying and socialization?
Example – Environmental Quality and...

? 

Underlying question: What causes economic growth?
A combination that is unattainable with current resources

BMW's production possibilities frontier showing their trade-off between producing roadsters and SUVs

A combination that is inefficient because not all resources are being used
Production Possibilities Frontiers and Opportunity Costs

Graphing the Production Possibilities Frontier

FIGURE 2-1

BMW’s Production Possibilities Frontier

<table>
<thead>
<tr>
<th>BMW’s Production Choices at Its Spartanburg Plant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice</td>
<td>Quantity of Roadsters Produced</td>
</tr>
<tr>
<td>A</td>
<td>800</td>
</tr>
<tr>
<td>B</td>
<td>600</td>
</tr>
<tr>
<td>C</td>
<td>400</td>
</tr>
<tr>
<td>D</td>
<td>200</td>
</tr>
<tr>
<td>E</td>
<td>0</td>
</tr>
</tbody>
</table>

A combination that is unattainable with current resources

BMW’s production possibilities frontier showing its trade-off between producing roadsters and SUVs

A combination that is inefficient because not all resources are being used
PPFs and Economic Growth

- How does economic growth happen?

- How do you model economic growth using a PPF?
  - Ans: An expansion of the PPF
Linear vs. Curved PPFs

- **Linear PPF**
  - Constant slope so constant opportunity cost

- **Curved PPF**
  - Changing slope so changing opportunity cost
PPFs and Opportunity Cost, the case of BMW

Opp Cost = - Slope = -(-800/800) = 1
PPFs and Opportunity Cost, the case of BMW

For each Luxury built, BMW gives up 2 roadsters

- In other words 1 Luxury = 2 Roadsters
- Question: If BMW wants to build another Roadster, how many Luxuries cars must it give up?

\[
\text{Opp Cost} = - \text{Slope} = -\left(-\frac{800}{400}\right) = 2
\]
Opportunity Cost from a Table

<table>
<thead>
<tr>
<th></th>
<th>Snowboards</th>
<th>Skis</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
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</tr>
<tr>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
</tbody>
</table>

• If Joe is producing at 6 snowboards and 12 skies, what is his opportunity cost of additional snowboards?

• How to Solve the problem: Ask how much do additional snowboards cost. Then scale the cost for just one snowboard.
Curved PPFs

- Curved PPF’s are associated with Increasing Marginal Opportunity Costs

**Definition:** As an economy produces more of a particular good, the opportunity cost of additional units of that good will increase.
Example of Increasing Marginal OC

1. What is the OC of increasing DVD production from A to B?
   • ______________________
   ______________________

2. What is the OC of increasing DVD production from B to C?
   • ______________________
   ______________________
Comparative and Absolute Advantage

- **Comparative advantage**: The ability to produce a good or service at a lower opportunity cost than competitors.

- **Absolute Advantage**: The ability to produce more of a good or service than competitors using the same amount of resources.
Comparative Advantage

What is YOUR opportunity cost of producing cherries?

- __________________________

What is NEIGHBOR’S opportunity cost of producing cherries?

- __________________________

Who has the comparative advantage of producing Cherries?  ____________
Comparative Advantage

What is YOUR opportunity cost of producing apples?

What is NEIGHBOR’S opportunity cost of producing apples?

Who has the comparative advantage of producing Apples?
Key Insight #1

- We can consume more if we specialize in producing the good for which we have an comparative advantage and then trading with our neighbor.

- In this model, **trade makes us better off!**
Gains from trade

You produce 20 apples, and trade 10 in exchange for 15 cherries. Your neighbor trades the 15 cherries for 10 apples.
Key Insight #2

What if an individual can produce more of BOTH goods by themselves? Does it still make sense to trade?

(a) Your production possibilities frontier

(b) Your neighbor’s production possibilities frontier
Gilligan’s Island
Gilligan and Skipper each produce coconuts and bananas

- Gilligan’s PPF
- Skipper’s PPF

Who has the comparative advantage of producing Bananas?
Who has the comparative advantage of producing Coconuts?
Gilligan and Skipper each produce coconuts and bananas

- Gilligan’s PPF
- Skipper’s PPF

Who has the Absolute advantage of producing Bananas?

Who has the Absolute advantage of producing Coconuts?
Key insight # 3 about trade

1. We can consume more if we specialize in producing the good for which we have a comparative advantage and then trading with our neighbor.

2. Even if an individual can produce more of BOTH goods by themselves, it still makes sense to trade.

3. Trade creates value by allowing us to obtain things that make us better off!
Market is Amazing!

- Making a Toaster
- Could YOU make a toaster?
- Link

$15.99
Circular Flow Model

**Definition:** A model that shows how everyone in the market is linked

**Factor Market:** where inputs to production are sold

**Goods/Product Market:** Where goods and services are sold