

ECO 182: Summer 2015 Scarcity, Opportunity Costs and Trade

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Why study Economics?

"...a dreary, desolate and, indeed, quite abject and distressing one; what we might call, by way of eminence, *the dismal science*"
 Thomas Carlyle(1849)

- ▶ The reason behind spending hours studying Economics :
 Scarcity

Over the years, Economics answered/studied the following questions:

- ▶ Scarcity
- ▶ Allocation
- ▶ Analysis of the behaviour of people.

Primarily, what you see used in economics is the study of **rational choice**, mostly under **constraints**.

Rational Choice Under Constraints

- ▶ Every fiscal year, the governments of some countries, decide on the level of expenditure(the budget) for all governmental programs for the next year. They must carefully allocate resources : Money, infrastructure, people
- ▶ Every month(or bi-weekly), you decide how much to spend on food, books, school fees, entertainment, rent, the latest movie, that amazing dress you saw at the mall...your money and time is not unlimited.

So is this constraint all about money?

- ▶ With every change in Government, a country decides how to maintain diplomatic relationships with every other countries. Who to align with, who to condemn. The diplomatic concessions and bargaining power is not unlimited...the payoffs/fallout of diplomatic relations can be significant for each policy choice.

Constraints

- ▶ Constraints are just limitations to your possible choices...of time, resource, money etc.
- ▶ Right now, you can either choose to fall asleep or pay attention or leave the class.
- ▶ Those are your possible choices.
- ▶ You might want to sing and dance on your chair...but that is a violation of classroom conduct and you will get into trouble...you can't do that.

AS YOU CAN SEE, YOUR CHOICES ARE CONSTRAINED.

- ▶ So, it seems almost everything is directed by scarcity.
- ▶ Just do what is best for you, under scarcity.
- ▶ But what is the "best" ? And who is this "you" ?

Simple Definition

Layman/Vague Definition: Cost of doing something.

Warning: NEVER USE THIS DEFINITION !

What can be something?

- ▶ An action: Sleep, Coming to class, getting drunk
- ▶ Buying something: coffee, lunch, "renting" a house on campus

Logically think like this:

You can choose to do either actions A or B. Each action gives you a payoff/happiness/"value".

You choose A.

By choosing A, you give up the value you could have got, if you chose B.

This value of B you just let go...that is the Opportunity Cost of doing A.

Examples

▶ Example 1:

Action	My Value
Buy 1 large, medium roast	\$ 3
OR	
Buy 1 cup of tea	\$2

So, when I buy a cup of coffee, I am sacrificing \$2 value of buying/drinking tea.

OC of buying coffee is \$2.

▶ Example 2:

Action	My Value
Sleep	\$ 30
OR	
Come to class	\$1300

So, if I come to class, I am sacrificing \$30 value of sleeping.

OC of attending class is \$30.

Examples Continued

▶ Example 3:

Action	My Value
Work at Library	Earn \$ 500 per 2 week
OR	
Work at Student Union	Earn \$501 per 2 week

OC working at library is \$501 per 2 week.

▶ **Note 1:**

I am comparing values which have same units.

\$500 per 2 week vs \$ 501 per 2 week.

\$3 vs \$2.

▶ **Note 2:** UNITS are important. Why ? Meaningful Comparison

Helps me make a choice (comes later in the course)

▶ **What if I have more than two things to choose from ?**

Examples Continued

▶ Example 4:

Action	My Value
Sleep	\$ 30
OR	
Come to class	\$ 1300
OR	
Play Video Games	\$250
OR	
Watch a movie	\$180

▶ Calculating OC of Coming to Class:

What am I giving up?	My Value
Sleep	\$ 30
Play Video Games	\$250
Watch a movie	\$180

- ▶ What is the maximum value I am giving up?
\$250
- ▶ Which alternate has the maximum value ?
Playing Video Games
- ▶ OC of coming to class :
\$250 (Value from playing video games)

Definition

- ▶ **Definition of OC:** Value of the best possible alternative use of the resource.
- ▶ In Examples 3,4: Resource is my time.
Note 1: For only two possible choice, the concept of best is trivial.
Example 4, shows when best is really important.
- ▶ How many choices and what choices I have, matter a lot.

Some Mathematical Preliminaries

- ▶ **Set** : A Set is a collection of objects. Example: (1) The set of all living humans on this earth contains each and every organism, which are classified as humans. (2) The set of natural numbers $\mathcal{N} = \{1, 2, 3, 4, \dots, 1567, 1568, \dots\}$
- ▶ **Subset**: A set A is a subset of set B if all elements of set A are there in set B .
- ▶ **Improper Subset**: $A \subseteq B$: B contains at least A .
- ▶ **Proper Subset**: $A \subset B$: B contains more elements than A .
- ▶ **Empty Set**: An empty set is a set which contains nothing. It is represented by: \emptyset
- ▶ **Element**: If x is an element of the set A , then we write $x \in A$
- ▶ Example: $\mathcal{B} = \{1, 2, 3, 4\}$; $\mathcal{A} = \{1, 2\}$; $\mathcal{C} = \{A, 3, 4\}$
- ▶ $\mathcal{A} \subseteq \mathcal{B}$ BUT $\mathcal{C} \subset \mathcal{B}$ is not true. Be careful!
- ▶ \emptyset is the subset of every set, but every set does not contain \emptyset

Mathematically Understanding OC

- ▶ **Defintion of OC:** Value of the best possible alternative use of the resource.
- ▶ In Examples 3,4: Resource is my time.
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Example 4, shows when best is really important.
- ▶ How many choices and what choices I have, matter a lot.

Arbitrage

The concept of trade, in any form, is driven by the principle of **Arbitrage**

- ▶ **Arbitrage:** *Buy cheap, sell dear.*
- ▶ People pick the action which has the least OC. (Why? Next chapter)
- ▶ **Buy Cheap:** Select the product/action(A) with the least OC for me.
- ▶ **Sell Dear:** Sell that product/action(A) to someone whose OC for A is higher than me.
- ▶ This basically translates into comparing individual values.

Example of Trade with OC

- ▶ In 1 hour, John can make either: **6** pizzas or **4** subs.
- ▶ In 1 hour, Ben can make either: **3** pizzas or **8** subs.
- ▶ John:
 - OC of making 1 pizza : $4/6 = \mathbf{0.66}$ Sub/Pizza
 - OC of making 1 sub : $6/4 = \mathbf{1.5}$ Pizza/Sub
- ▶ Ben:
 - OC of making 1 pizza : $8/3 = \mathbf{2.66}$ Sub/Pizza
 - OC of making 1 sub : $3/8 = \mathbf{0.375}$ Pizza/Sub

Example of Trade with OC continued

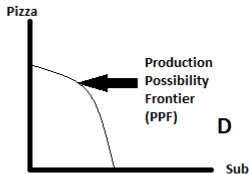
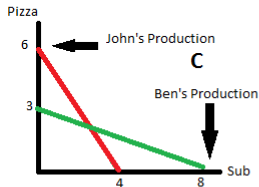
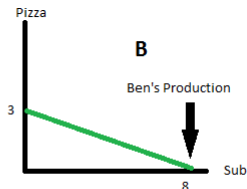
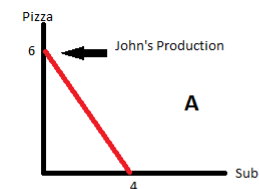
Curiously the following is true.

- ▶ **Pizza:** $OC_{John}^{Pizza} < OC_{Ben}^{Pizza}$
(0.66) (2.66)
- ▶ **Sub:** $OC_{John}^{Sub} > OC_{Ben}^{Sub}$
(1.5) (0.375)
- ▶ In the language of economics:
John has *Comparative Cost Advantage*(CCA) in making Pizza
Ben has *Comparative Cost Advantage*(CCA) in making Subs
- ▶ John is going to produce something(Pizza) Ben will never want to produce by himself...because it is too costly for Ben to do so.

Why Trade ?

- ▶ Say John likes Subs and Ben likes Pizza.
- ▶ By making 6 pizza and exchanging it for 8 subs, John is getting $4/3$ or **1.33** Subs/Pizza.
If he did not trade, he would exchange 6 pizza for 4 subs from himself or get $4/6 =$ **0.66** Subs/Pizza.
- ▶ By making 8 subs and exchanging it for 6 Pizza, Ben is getting $6/8$ or **0.75** Pizza/Sub.
If he did not trade, he would exchange 8 Subs for 3 Pizza from himself or get $3/8 =$ **0.375** Pizza/Subs.
- ▶ Trade gives them more of what they want than not trading.
- ▶ This type of trade is called **Bartering**.

Graphical Example



- ▶ Figures **A, B** shows the *Complete Specialization* for John and Ben.
- ▶ Figure **D** is the typical *downward sloping, curved* PPF that is common in economics.

Production Possibility Frontier

- ▶ The PPF and the region bounded by it, is the *Production Possibility Set*(PPS) for any individual/firm/country.
- ▶ The PPS shows the possible combination of the quantities of every good, an individual/firm/country can produce, given the technology available to it.
- ▶ In Figures **A**, **B**, **C**, the OC for any good is constant, along the PPF, moving in and from any direction.
Can you tell why ?

Free Trade is always good ?

- ▶ A place where economic agents(John and Ben in our example) interact and exchange goods and services is called a market.
- ▶ Since there are no imperfections in this "Market", this type of trade is "**Free Trade**"

- ▶ *Imperfections ??*

Neither John, nor Ben can force the other to buy/sell more/less than they want to. *You will see examples of imperfections in the market in later classes.*

Hint:

*Have you heard of **monopoly**?*

*Have you heard of **tariff**?*

*Have you heard of **excise taxes**?*