ECO 182: Summer 2015
Choice & Preference

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How to choose ?

We have seen that people look at their available options and note the opportunity cost for each.
We have claimed that people choose the option with the lower OC.
Let's recap:

- **Example 4 continued**:

Available Actions	My Value
Sleep	\$30
Attend Class	\$1300
Play Video Games	\$250
Watch Movie	\$ 180

- Q: Which one has the highest value for you?
  A: Going to class ... \$ 1300
- Q:Which action should you choose then? And why?
  A:By rational choice, you should be choosing the action which gives you the highest value(monetary, mental happiness etc.)

Rational Choice vs Opportunity Cost

- **Example 4 continued**:

Available Actions	My Value	OC
Sleep	\$30	\$ 1300
Attend Class	\$1300	\$ 250
Play Video Games	\$250	\$ 1300
Watch Movie	\$ 180	\$ 1300

- Maximum value comes from: Going to Class ... \$1300
  By Rational Choice, you should thus choose to go to class
  (*Only if you are a rational economic agent of course*)
- By Rational Choice: Choose the action with the maximum value.
- If you would rather minimize cost, choose the action with the lowest OC.
- The result would be the **same**

Rational Choice

- To choose something over the other, you must be very clear about which of them you value more.
- So how did I come by these numbers/values ?
  - i Randomly
  - ii But note, I can *rank* them from highest to lowest.
- If you had to choose between drinking soda, coffee, beer, Scotch for lunch, you should(if you are a rational economic agent) know which one you prefer more/less/equal to the other...and then make a choice which maximizes your value.
- Like it or not, we are hardwired to choose like this. This is built into us.

The Theory of Preferences

- Intuitively understand the importance of ranking
- There is a rigorous mathematical foundation behind describing preferences. (Don't worry, we won't do too hard maths. But there will be the very very complicated addition and subtraction. I might ask you to multiply at times...even divide!)
- There are four axioms, that the preferences of a rational economic agent **should** satisfy.
  1. Reflexivity
  2. Continuity
  3. Transitivity
  4. Completeness

Preferences continued

- **Completeness**: When you choose from a set of actions/items, you must always know which you prefer to what.
- **Transitive**: If you prefer A to B and B to C, i.e.
  $A \succ B$ and $B \succ C$, then
  you prefer A to C, i.e.
  $A \succ C$
- Note: $\succ$ is the Economics symbol for strictly more preferred. Looks very similar to the mathematical symbol for "Strictly Greater than" $>$
  Doesn't it ? Be careful when you write !

Examples of Preference

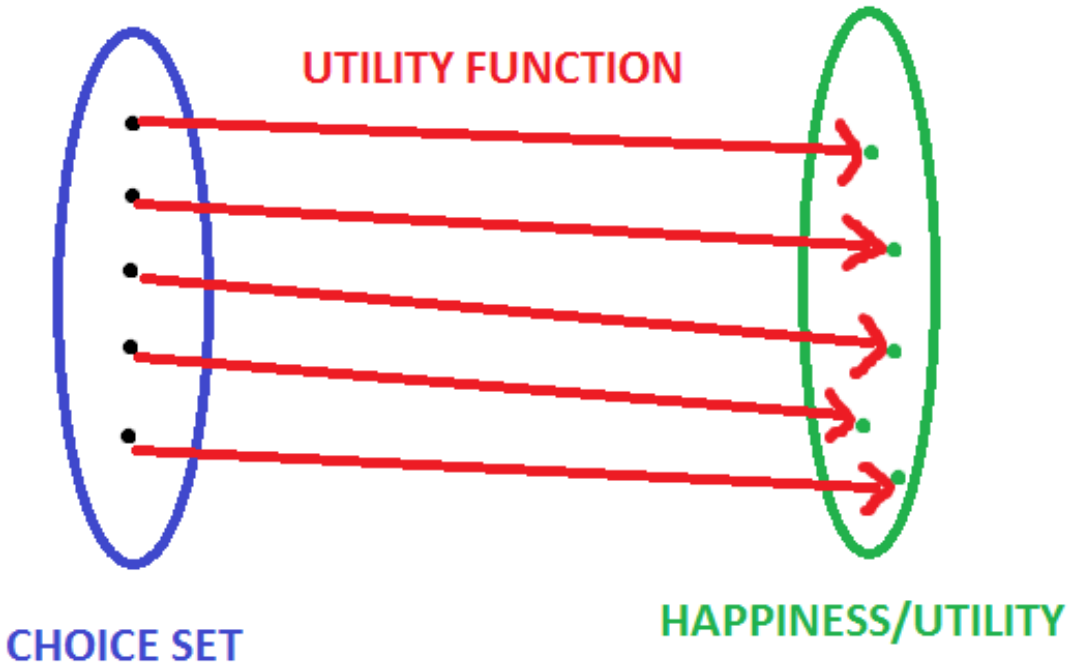
Okay, enough mathematics. What do I mean by $A \succ C$? Is that something people use in daily life? Actually, all the time. But without using the symbol, people just intuitively rank by preference.

- Q: What do you like to eat for breakfast?
  A: Egg $\succ$ Bacon $\succ$ Fish
- Q: What do you like to listen to on your way back home?
  A: Blues $\succ$ Metal $\succ$ Classical
- Q: What do you wanna play on your PC?
  A: Sports games $\succ$ Racing games $\succ$ Strategy games $\succ$ Nothing
- Q: What courses do you want to study this summer?
  A: Mathematics $\succ$ Organic Chemistry $\succ$ Economics
- Q: What should I order at the university coffee shop?
  A: Hot chocolate $\succ$ Coffee $\succ$ Tea

Utility Function

- When your preferences satisfy RCTC (remember their names?), you can do something to give your choice process more structure.
- Now there will exist something called an **Utility Function**, which looks at the choice set you have(list of actions/items you can choose from), and assigns a value(what is this value?) to each of actions/items you can take/choose.
- This function is in your head. Seriously!

How does the Utility Function work ?



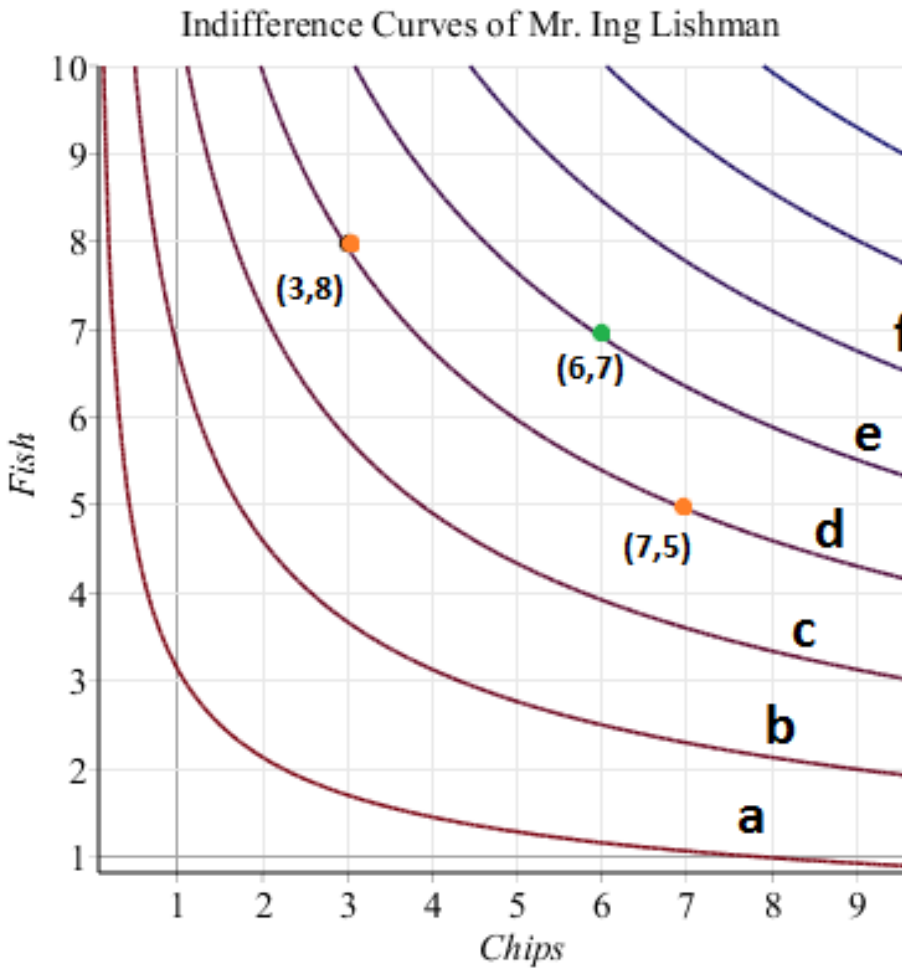
- For every choice you can make, the utility function tells you how happy you will be to make this choice(or in formal terms, what is your *Utility* for that choice.)
- Unit of measure for Utility: *Utiles*

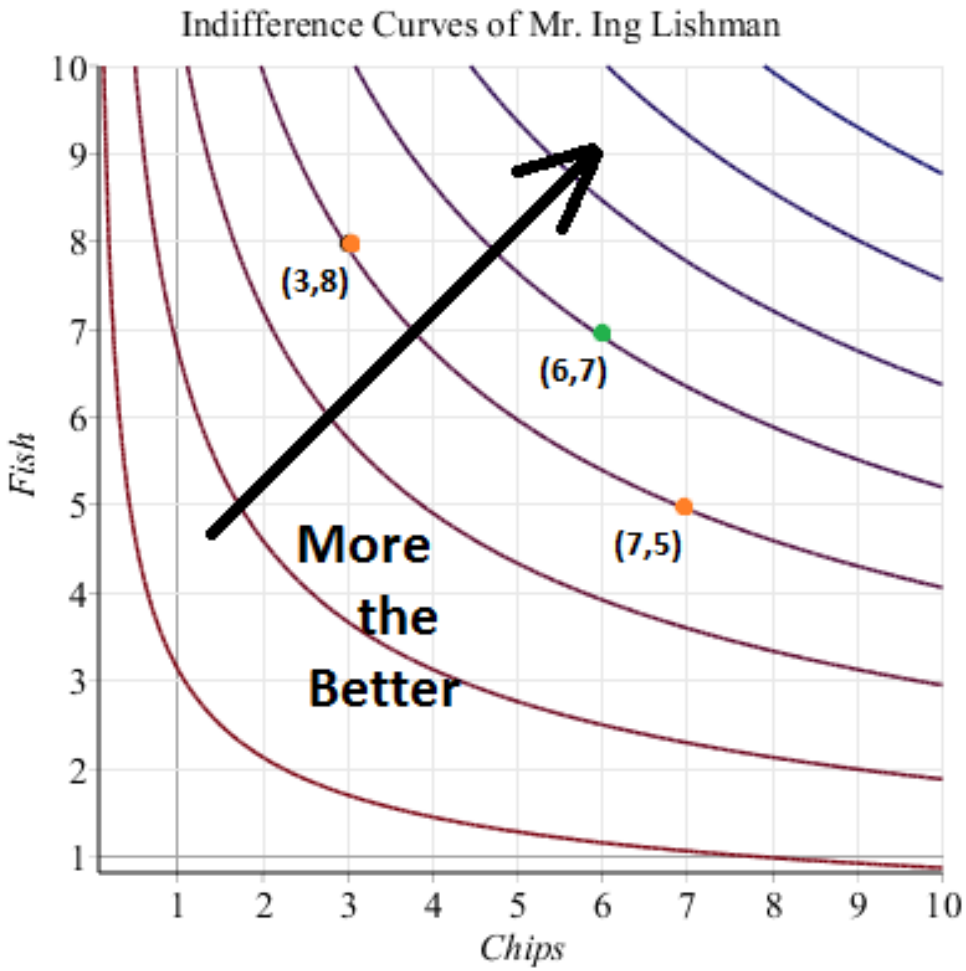
Indifference Curves

Now we will focus on *consuming* items...say Fish and Chips.

- Mr. Ing Lishman likes both Fish and Chips. But he has *preferences* for different amounts of Fish and Chips.
- Mr. Ing Lishman likes to consume the following combinations(bundles) of (Chips,Fish).
  1. (6,7) $\succ$ (3,8)
  2. (6,7) $\succ$ (7,5)
  3. (3,8) $\sim$ (7,5)
- (1) means that the Utility from consuming 7 pieces of Fish and 6 pieces of chips is **more** than the Utility from consuming 8 pieces of Fish and 3 pieces of Chips.
- (3) means that Mr. Ing Lishman will be **equally** happy to consume either 8 pieces of Fish and 3 pieces of Chips, *or* 5 pieces of Fish and 7 pieces of Chips.

Indifference Curve Graph





Utility of curve **b** is more than utility of curve **a**; utility of curve **c** is more than that of curve **b**...and so on.

How much to consume or where to stop consuming ?

Where do you stop ?

1. Till you have consumed everything affordable ?
2. Till you have consumed everything available ?
3. Till you have consumed everything you want ?

All three are important questions to answer.

1. Let us think about scarcity. The most intuitive problem you (or Mr. Lishman for that matter) will face is : fixed money/income to spend.
2. Ok, you have all the money you can spend. You might find there isn't enough Fish(or Chips) available in this world to consume.
3. Even if you can escape the previous two points, you will still stop somewhere. There is a limit to your wants(trust me, there is).

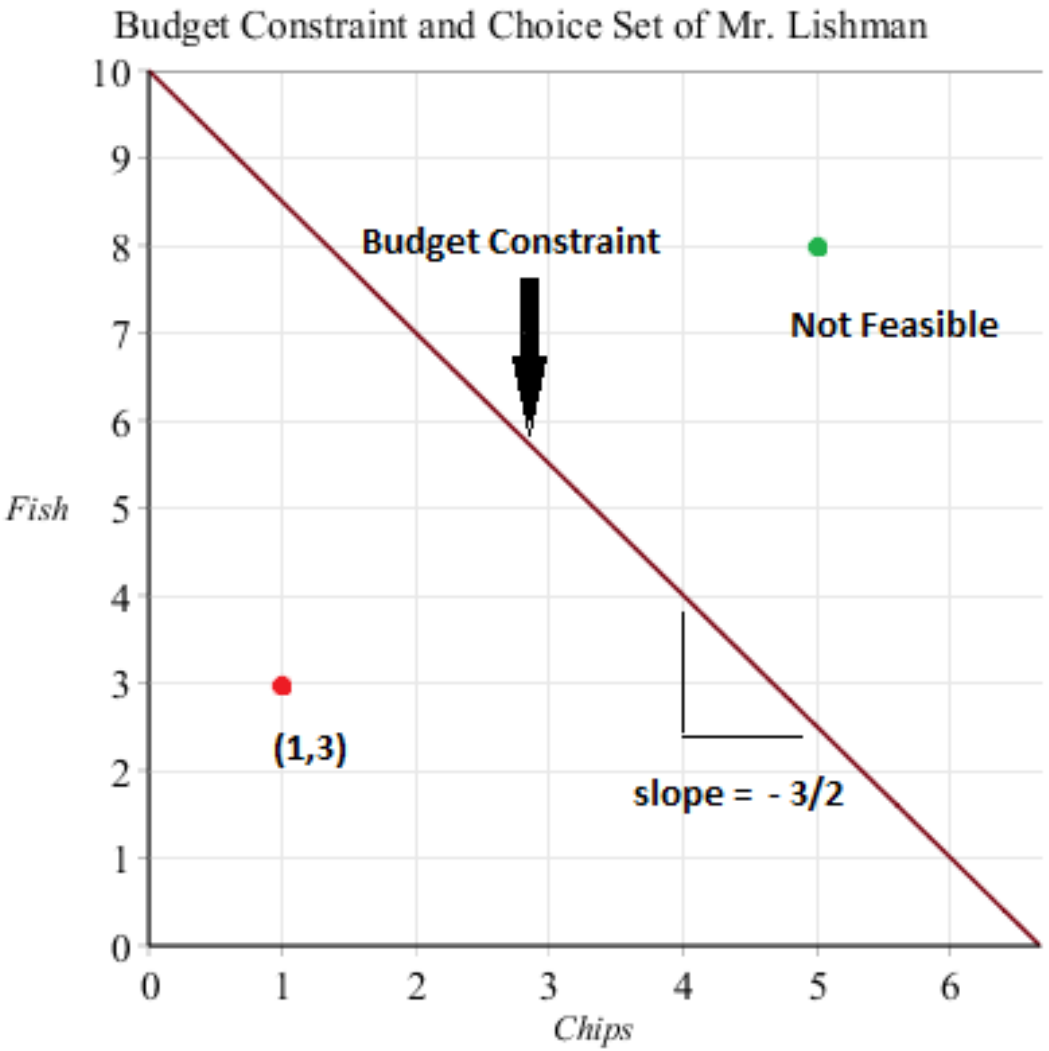
Budget Constraint: One good

Budget: Money in pocket/hand ... say \$20.
Price of one beer battered Haddock: \$2/unit.
You buy 10 of them. You spend: \$2 x 10 = \$20.
Given your income and price of Fish, 10 units are affordable.
You think, that you will be happier if you could eat 13 units. But you can't afford 3 extra units given the price and your income.
Given your income and price of Fish, 13 units are not affordable.

Budget Constraint: Two goods

- Money in pocket/hand ... \$20.
  Price of one beer battered Haddock: \$2/unit
  Price of one seasoned chip: \$3/unit
- Buy 3 units of Fish ... \$2 x 3 = \$6
  Buy 1 unit of Chip ... \$3 x 1 = \$3
  Spend total : \$6 + \$3 = \$9
- Quite Affordable !
- P_X x Q_X +P_Y x Q_Y = Expenditure
- AFFORDABLE: Expenditure $\leq$ Income
- BUDGET CONSTRAINT: P_X x Q_X + P_Y x Q_Y = Income
- CHOICE SET: P_X xQ_X + P_Y x Q_Y $\leq$ Income

Budget Constraint Graph



- Slope of the Budget Constraint:

$$-\frac{\text{Price of the good in X axis}}{\text{Price of the good in Y axis}} = -\frac{P_X}{P_Y} = -\frac{3}{2}$$

Rational Choice under Constraint

We have the following information:
What we can afford/buy : Budget set/Feasible set/Choice set.
What our preferences are: Indifference Curves.

- **Marginal Utility**: The *extra* utility that I get from consuming one *extra* unit of a good.
- Intuitively: I will buy till the MU from the next unit I am thinking about buying is *negative*.
- But I also want to maximize my utility.

Marginal Utility Example: One Good

Income: \$5. Price of pizza: \$1 per slice.

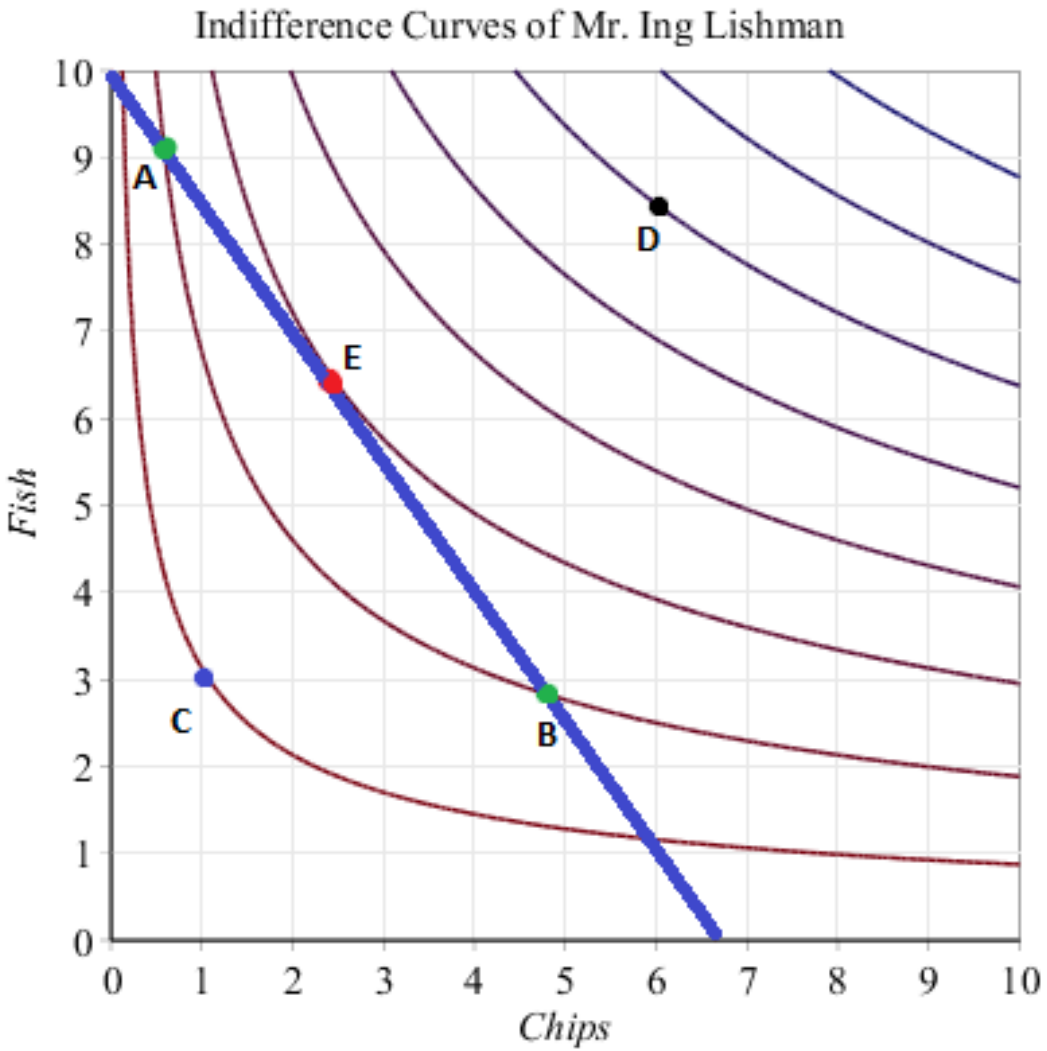
Slice	Marginal Utility (Utile/\$)	Buy?	Total Utility
1	10	✓	10
2	8	✓	$18 = 10 + 8$
3	6	✓	24
4	0.5	✓	24.5
5	-4	X	20.5

Note1: The Maximum Utility is at the 4^{th} slice.

Note2: At the 5^{th} slice, the MU is negative. I don't want to buy that !!

But what when there are two goods ?

Rational Choice Under Constraint: Graph



- How to find my optimum/best/utility maximizing/rational choice?
- Pick the point on the **highest** Indifference Curve, that...
- Belongs to your feasible set.
- For example: Point **E** is the only such point in this case for Mr. Ing Lishman.
- At **E**, $\frac{MU_{Fish}}{Price_{Fish}} = \frac{MU_{Chips}}{Price_{Chips}}$
- At optimum, $\frac{MU_X}{Price_X} = \frac{MU_Y}{Price_Y}$