

Consumer Theory: Budget Set and Preferences

Econ 1101

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ECON 1101 Lecture 8.2

1. Introduction to Consumer Theory

Budget Constraint

2. Introducing Preferences

(a) Perfect Substitutes

(b) Perfect Complements

(c) Decreasing MRS

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1. Introduction to consumer theory

Consumer Theory

So far, we have only assumed that demand is given and predetermined

- In econland we made no comment on why D1-D10 liked widgets as they did (why is D1 valuation 9, D2 8 etc)
- We also didn't allow people to consume more than one unit

However, we can go one step back and figure out how demand was found in the first place

- Consumer theory focuses in this part: how consumer make their consumption decisions (how you make your decisions)
- Two main elements:
 - 1 Budget constraints (how much can I afford to consume)
 - 2 Tastes (what do I want to consume)

Consumer Theory

We will see examples with:

- Beer and pizza!
- Similar to fish and coconuts, use new graph with two goods.
- Use graph to see how demand changes when any of the following change:
 - Price of beer
 - Price of pizza
 - Income

Budget Constraint

- (1) Given income, price of good 1, price of good 2
 - Make a table of what "goldy" can afford
 - Plot the Budget Constraint

- (2) Talk about the elements of the Budget Constraint
 - Vertical Intercept "A"
 - Horizontal Intercept "B"
 - Slope (opportunity cost)

- (3) See how would the BC change with:
 - Changes in prices
 - Changes in income

Budget Constraint

Goldy

- Consumes Pizza and Beer



Suppose

- Goldy has income: $I = \$24$
- Price of pizza: $P_{pizza} = \$4$ slice
- Price of beer: $P_{beer} = \$2$ bottle

Let's:

- 1 Make a table of what goldy can afford
- 2 Plot Budget Constraint

Budget Constraint

(1) Given income, price of good 1, price of good 2

- Make a table of what "goldy" can afford
- Plot the Budget Constraint

(2)

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-
-

(3)

-
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Budget Constraint

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Introducing Preferences

Back to our main goal: Consumer theory - how to model the demand

- We want to know how consumers make their consumption decisions
- 2 elements: how much I can consume (BC), what do I want to consume (preferences)

1. Budget constraint tells us what the consumer **can** do
2. Preferences will tell us what the consumers **want** to do
 - What the consumer **wants** to do depends on his **preferences**
 - Consumer will get different **utility** from different combinations of goods
 - Will make the choice that **maximizes utility**, we will call this choice the **optimal consumption bundle**

A word on all this terms....

Preferences, Utility and Optimal Choice

- What consumers want to do depend on the taste of the consumer:
 - for example I would be very happy with 10 books, perhaps some of you prefer to have 10 movies or some of you prefer 5 movies and 5 books (a more diversified mix of goods)
- Economists study tastes or **preferences** of consumers
- Preferences are just consumer's rankings of potential consumption bundles (do you prefer 2 pizzas and 1 beer to 1 pizza and 2 beers or 3 pizzas and 3 beers etc)
- Preferences can be described by **utility functions**

Preferences, Utility and Optimal Choice

...Preferences can be described by **utility functions**

- A utility function turns different bundles into a number (a util), example utility of 2 pizzas and 1 beer = 5 utils
- Utility measures how happy the consumer is with the bundle of goods
- What matters is how the utility of one bundle compares to the utility of another bundle (we prefer one bundle to another if it gives higher utility - it makes me happier-)
- We will assume consumers want to be as happy as possible i.e that they **maximize utility**

Summing up: consumers want to consume according to their preferences the bundle that maximizes utility

Put BC & preferences together: **optimal consumption bundle** is the bundle of goods you can **afford** (BC) and that makes you **happiest** (max utility)

Different Types of Preferences

- We will look at 3 different types of preferences
- Let's introduce some goldys friends (other mascots)
 - Hawkeye
 - Bucky Badger
- Assume the mascots consume only pizza and beer, they all have the same income and face same prices but differ in preferences
 - same budget constraints, as we just looked at
 - Income = \$24
 - Price of pizza = \$4
 - Price of beer = \$2
- We will explain their preferences and then look at their choices

Case 1: Perfect Substitutes

Case 1: Hawkeye (Perfect Substitutes)



- Hawkeye gets utility from calories (the more the better).
- Suppose pizza has 200 calories and beer has 200 calories

$$\text{Utility} = 200 * Q_{\text{pizza}} + 200 * Q_{\text{beer}}$$

- What bundle maximizes utility? What is total utility?
- One way to answer is **calculate utility per dollar spent** on each good

Case 1: Perfect Substitutes

- Introduce concept of **Indifference curves**: Combinations of beer and pizza that give the same utility (the consumer is indifferent)
- Hawkeye has preferences for **any other combination of beer and pizza**. They can be shown on other **indifference curves**. Note: utility was calculated from the utility function for Hawkeye



Case 1: Perfect Substitutes

Rule for perfect substitutes

- 1 Calculate utility per dollar spent on each good
- 2 Pick the good with the best value (higher utility per dollar spent)

In the graph

- pick the bundle on the budget constraint that gets to the highest indifference curve

Slope of indifference curve is the Marginal Rate of Substitution MRS

- In the first example, it's one for one. (value of one more pizza slice in terms of beer)

Case 2: Perfect Complements

Case 2: Bucky Badger
 Fixed proportions
 (Perfect Complements)



Bucky is very particular:

- A meal: one beer and one pizza
- Utility equals number of meals.
 - he is equally as happy with two beers and one pizza as he is with one beer and one pizza because it's both are one "complete" meal
- Suppose Bucky has $I = 24$ and $P_{pizza} = \$4$ and $P_{beer} = \$2$
- What is optimal consumption bundle?
- How much does a meal cost?
- How many meals can he buy?

Case 2: Perfect Complements

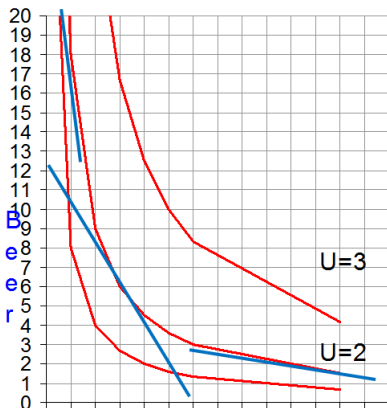
Remember, the higher the indifference curve, the better. ICs are right angles for perfect complements (fixed proportions) because Bucky is equally happy having 4 beer and 4 pizza and 5 beer and 4 pizza, or 6 beer and 4 pizza, ..., or 100000 beer and 4 pizza, since he only gets 4 meals out of it. That's why the points (4,4), (4,5), (4,6), ..., (4,10000), ... are all on the same indifference curve.



Case 3: Diminishing MRS

In between these extreme cases (our “normal” case) **Diminishing MSR**

- Diminishing MRS tells us that we are willing to give up more the less we have of something, and are willing to give up less the more we have.
- IC curves bend at the ends to reflect this fact (are bowed shaped)
- as he eats more pizza, his willingness to give up beer to get even more pizza goes down
- as he eats less and less pizza his willingness to give up beer goes up



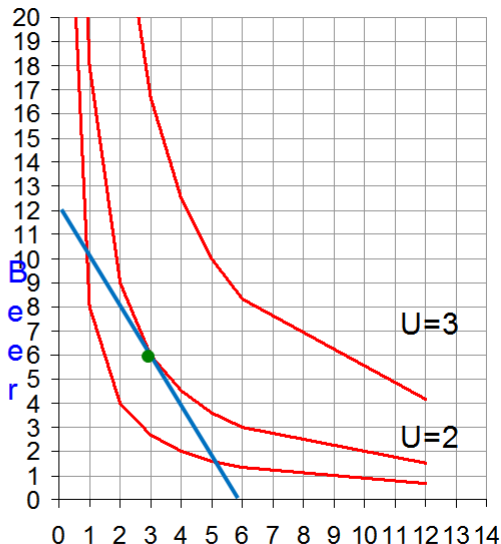
Diminishing MRS: finding the optimal bundle

Suppose

$$P_{\text{Beer}} = \$2, P_{\text{Pizza}} = \$4, \\ I = \$24$$

The green point is where we have the highest indifference curve that has a consumption bundle we can afford

The green point is our Optimal Consumption Bundle



Case 3: Diminishing MRS

For preferences with **decreasing marginal rate of substitution**, the optimal consumption bundle satisfies two conditions:

(1) On budget constraint and

(2)

$$\text{MRS} = \frac{P_{\text{pizza}}}{P_{\text{beer}}} \text{ (which is just slope of the BC)}$$

Marginal benefit of pizza (in beer) = Marginal cost of pizza (in beer)