

Chapters 7 and 8: Optimal Consumer Behavior

Econ 102: Introduction to Microeconomics

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1.1 Goals of this class

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- Learn how consumers optimally make their decisions to consume.
- Learn how optimal decisions depend on relative prices.
- Learn how optimal decisions depend on income.

1.2 Reading

Reading

- Consumer utility: Chapter 7, pages 154 - 164.
- Budgets: Chapter 8, pages 172 - 174.

2 Utility

2.1 Utility and Marginal Utility

Utility

- **Utility:** measure of the total satisfaction that people get from consuming stuff.
 - Largely a theoretical measure.
 - Can be short: utility gained from eating a sandwich.
 - Can be sustained: utility gained from owning a car.
- **Marginal Utility:** the *additional utility* gained from consuming *one additional unit* of a good.
- **Law of Diminishing Marginal Utility:** as you consume more of a good, the total utility may increase, but the marginal utility decreases.

Example

Suppose someone obtains utility from consuming MP3s and Pizza.

MP3s				Pizza			
Quantity	Utility	MU	MU/P	Quantity	Utility	MU	MU/P
0	0			0	0		
1	100			1	48		
2	180			2	88		
3	240			3	120		
4	280			4	144		
5	300			5	160		

2.2 Utility Maximization

Most Bang for your Buck

- Nonessential assumption - consumers spend all of their income on these two goods.
- Suppose you are spending all your money and $MU_{Pizza}/P_{Pizza} > MU_{MP3}/P_{MP3}$. Should you...
 - stick with this consumption choice?
 - instead consume fewer MP3s and more pizza?
 - instead consume less pizza and more MP3s?
- What is the effect of this choice on $MU_{Pizza}/P_{Pizza} - MU_{MP3}/P_{MP3}$.
- Utility maximization rule:

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2}$$

Example Continued

- Suppose MP3s are \$2.50 and Pizza is \$1. Compute MU/P for each consumption possibility.
- List all possible utility maximizing solutions.
- What is the utility maximizing choice when income is \$12?

- What is the utility maximizing choice when income is \$16?
- What is the utility maximizing choice if income is \$16 and the price of pizza increases to \$2.
 - What was the impact on the optimal quantity of pizza?
 - What does this say about the demand curve for pizza?

2.3 Paradox of Value

Paradox of Value

- Water, which is essential to live, and essential to grow the things we eat and live off of, costs very little.
- Diamonds, utterly useless except for their pretty shiny properties, cost a lot.

$$\frac{MU_{Water}}{P_{Water}} = \frac{MU_{Diamonds}}{P_{Diamonds}}$$

3 Budget Constraints

3.1 Budget Constraint

Budget Constraints

- A **budget constraint**, aka **budget line**: equation and graphical display of what quantities of two goods are affordable.
- Assume divisible goods, or large quantities of goods.
- Budget constraint for two goods:

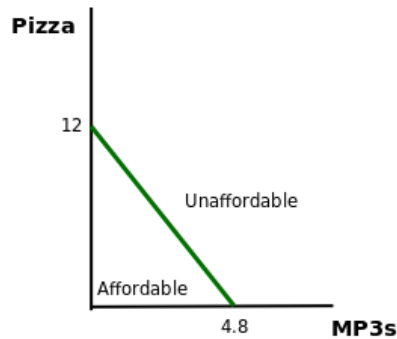
$$P_1Q_1 + P_2Q_2 = I$$

3.2 Example

Example

- Price pizza = \$1.00
- Price MP3s = \$2.50
- Income = \$12.00

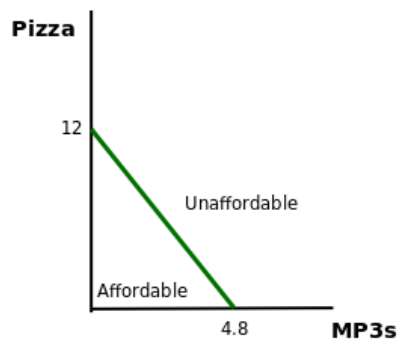
$$Q_{Pizza} = 12 - 2.50Q_{MP3}$$



3.3 Shifts in Budget Constraints

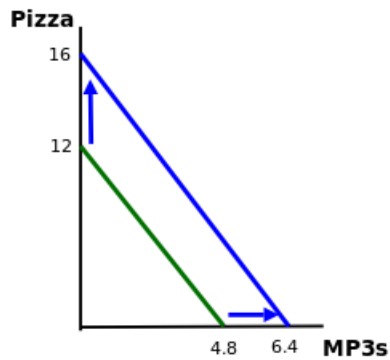
Graphing Budget Constraint

- Each intercept: quantity of the good purchased if all income was used for that good.
- Slope = P_{x-axis}/P_{y-axis} .
- Slope is the quantity of Y that one needs to give up to purchase one additional unit of X .



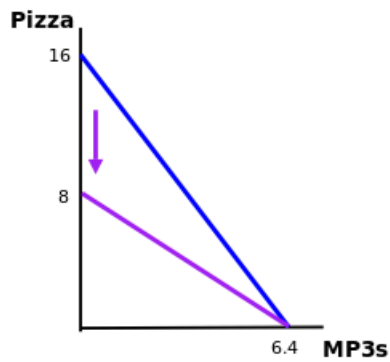
Changes in Income

- Suppose income increases to \$16.
- Shifts out both intercepts, slope remains same.



Changes in Price

- Suppose income remains at \$16.
- Suppose price of pizza increases to \$2.
- Shifts the pizza intercept inward.



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4.1 What We Have Learned

What We Have Learned

- A theoretic construct, **utility**, for predicting how optimal consumer behavior reacts to changes in prices and incomes.
- Graphical technique for illustrating the consumption possibilities for an individual's income.