

CHAPTER

19

The Logic of Individual Choice: The Foundation of Supply and Demand

Chapter Goals

- Discuss the principle of diminishing marginal utility and the principle of rational choice.
- Explain the relationship between marginal utility and price when a consumer is maximizing total utility
- Summarize how the principle of rational choice accounts for the laws of demand and supply.
- Name three assumptions of the theory of choice and discuss why they may not reflect reality.

Rational Choice Theory

According to traditional economists, our behavior is motivated by rational self interest.

According to this theory, two things determine what people do:

- **Utility**, which is the pleasure people get from doing or consuming something.
- The price of doing or consuming that something.

Total Utility and Marginal Utility

Utility = Satisfaction

Total utility is the total satisfaction one gets from consuming a product.

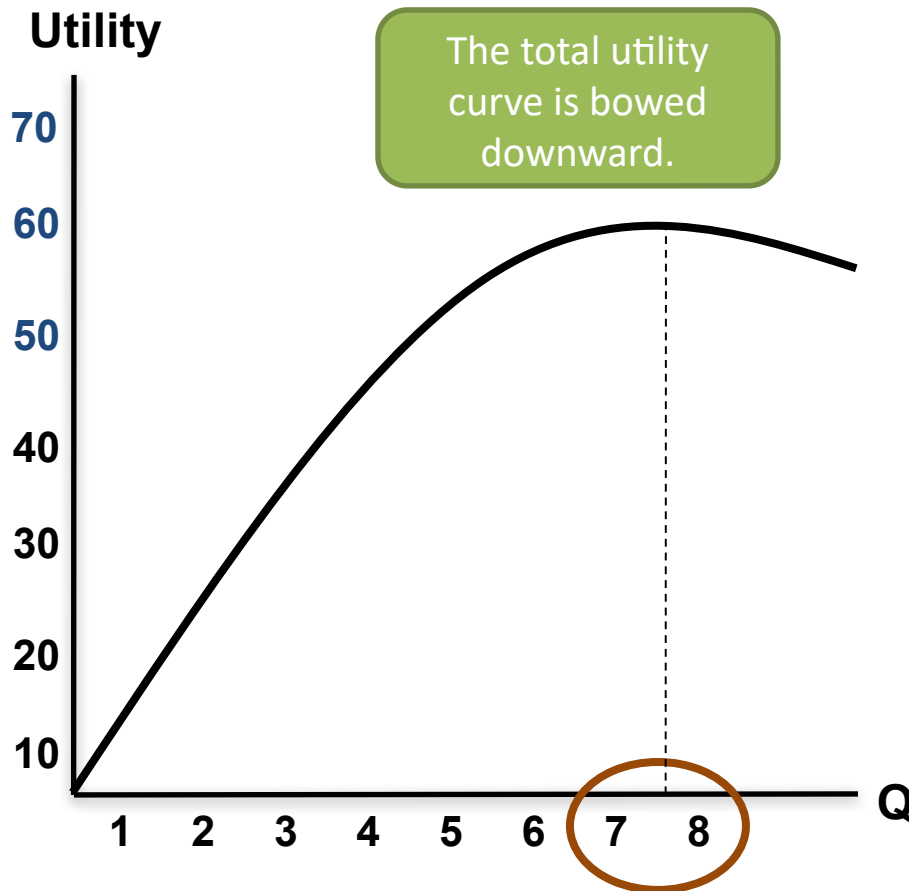
Marginal utility is the satisfaction you get from the consumption of one additional unit of the product above and beyond what you have consumed up to that point.

Application: Total Utility and Marginal Utility

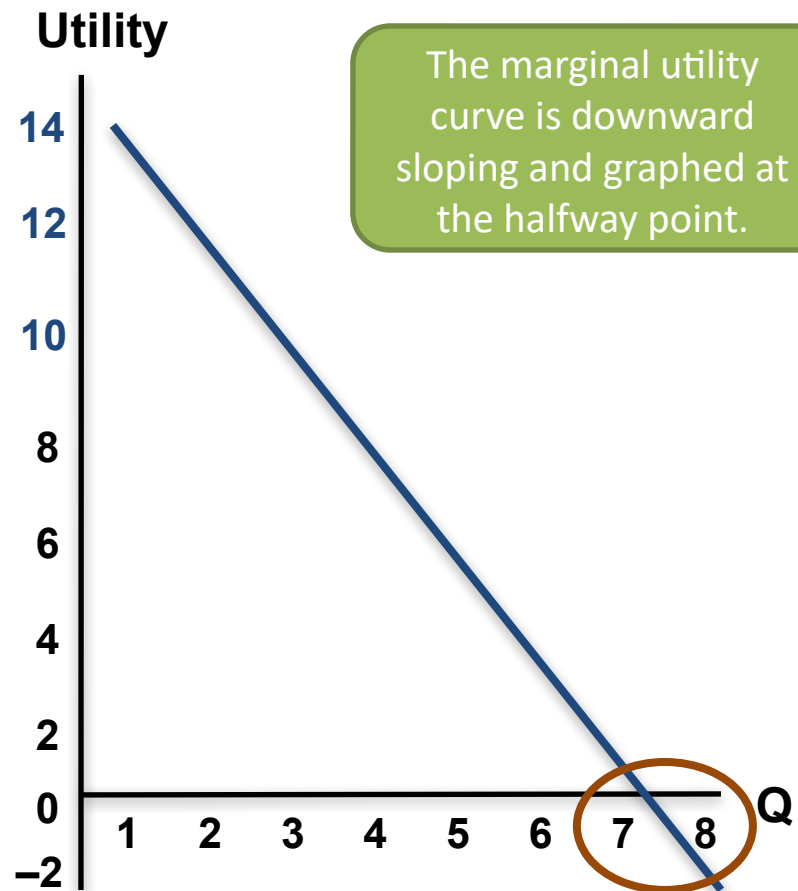
Number of Pizza Slices		Total Utility	Marginal Utility
0	-----	0	14
1	-----	14	12
2	-----	26	10
3	-----	36	8
4	-----	44	6
5	-----	50	4
6	-----	54	2
7	-----	56	0
8	-----	56	-2
9	-----	54	

Application: Comparative Advantage

Total Utility Curve



Marginal Utility Curve



Diminishing Marginal Utility

The **principle of diminishing marginal utility** states that after some point, the marginal utility received from each additional unit of a good decreases with each additional unit consumed.

- As additional units are consumed, marginal utility decreases, but total utility continues to increase.
- When total utility is at a maximum, marginal utility is zero
- Beyond this point, total utility decreases and marginal utility is negative.

Rational Choice and Marginal Utility

Rational individuals want as much satisfaction as they can get from their available resources.

Any choice that does not give you as many units of utility as possible for the same amount of money is an irrational choice.

According to the **basic principle of rational choice**, people spend their money on those goods that give them the most marginal utility per dollar.

Rational Choice and Marginal Utility

The **principle of rational choice** states that people spend their money on those goods that give them the most marginal utility (MU) per dollar.

Consume another unit of X if: $\frac{MU_X}{P_X} > \frac{MU_Y}{P_Y}$

Consume another unit of Y if: $\frac{MU_Y}{P_Y} > \frac{MU_X}{P_X}$

Maximizing Utility and Equilibrium

The **utility maximizing rule** states that when the ratios of the marginal utility to price of the two goods are equal, you are maximizing utility.

If:
$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y}$$

you are maximizing utility.

Application: Maximizing Utility

Big Macs (P = \$2)				Ice Cream (P = \$1)			
Q	TU	MU	MU/P	Q	TU	MU	MU/P
0	0	20	10	0	0	29	29
1	20	14	7	1	29	17	17
2	34	10	5	2	46	7	7
3	44	3	1.5	3	53	2	2
4	47	0	0	4	55	1	1
5	47	-5	-2.5	5	56	0	0
6	42	-10	-5	6	56	-4	-4
7	32			7	52		

Suppose you have \$7 to spend. How will you spend it?

Extending the Principle of Rational Choice

Utility is maximized when:

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} = \frac{MU_Z}{P_Z}$$

The cost per additional unit of utility is equal for all goods and the consumer is as well off as is possible.

A person's choice of how much to work is made simultaneously with the person's decision of how much to consume.

Rational Choice and the Law of Demand

When the price of a good goes up, the marginal utility per dollar ($MU/\$$) from it goes down, and we consume less of it and its marginal utility increases.

Quantity demanded falls as price rises.

When the price of a good decreases, the $MU/\$$ increases, and we consume more of it and its marginal utility decreases.

Quantity demanded increases as price falls.

Income and Substitution Effects

The inverse relationship between price and quantity demanded is due to the income and substitution effects.

The **income effect** is the reduction in quantity demanded when price increases because the price increase makes one poorer.

The **substitution effect** is the reduction in quantity demanded when price increases because you substitute another good for the more expensive one.

Application: Income and Substitution Effects

Suppose ice cream is now \$2.

You are given an extra \$3 to make up for this price increase so there is no income effect.

How will your spending change (substitution effect)?

Big Macs (P = \$2)			
Q	TU	MU	MU/P
0	0	20	10
1	20	14	7
2	34	10	5
3	44		

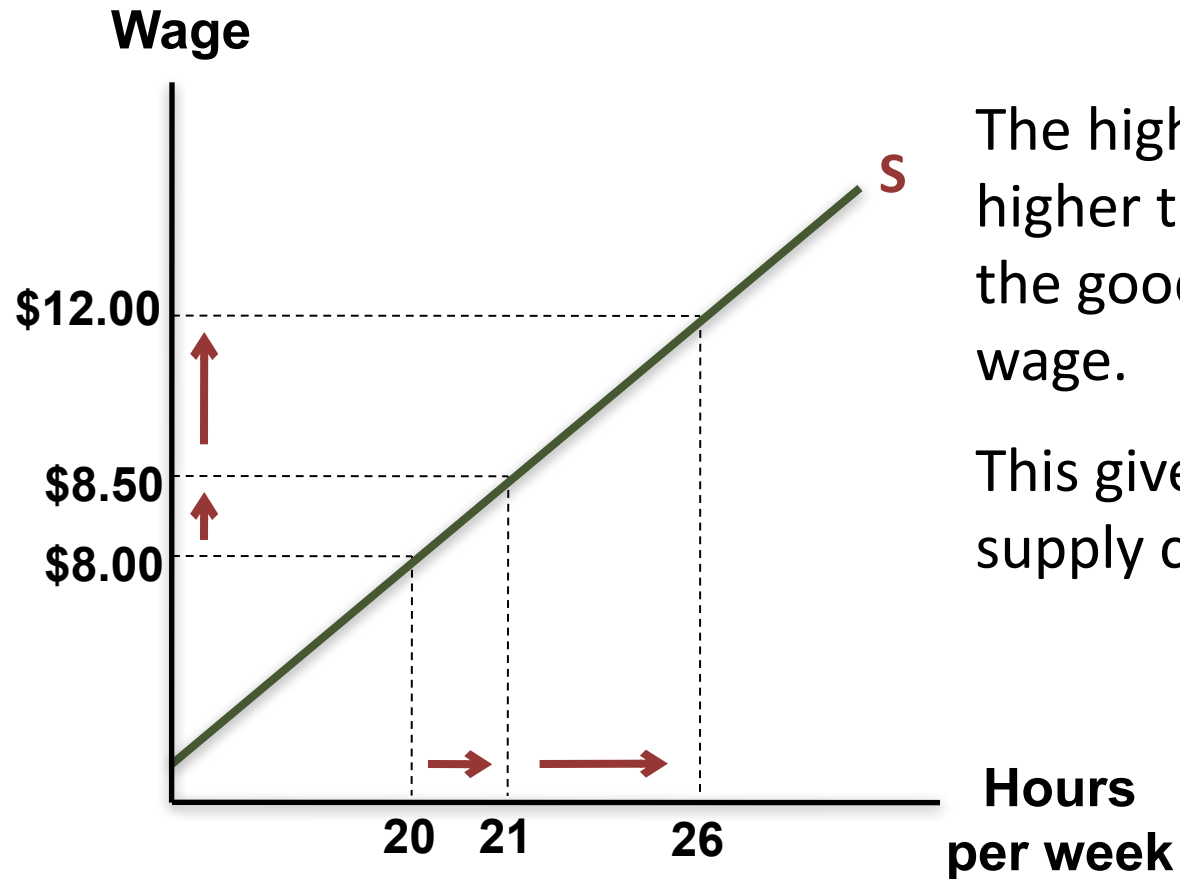
Ice Cream (P = \$2)			
Q	TU	MU	MU/P
0	0	29	14.5
1	29	17	8.5
2	46	7	3.5
3	53		

Rational Choice and the Law of Supply

According to the principle of rational choice, if there is diminishing marginal utility...

- and the price of supplying something goes **up**, you supply more of that good.
- and the price of supplying something goes **down**, you supply less of that good.

Application: Wage Rates and Labor Supply



The higher the wage, the higher the marginal utility of the goods you can get for the wage.

This gives an upward-sloping supply curve.

Opportunity Cost

In the context of utility, it is the marginal utility per dollar you forgo from consuming the next-best alternative.

Opportunity cost is the benefit forgone of the next-best alternative.

According to the principle of rational choice, to maximize utility, choose goods until the opportunity cost of all alternatives are equal.

If the $MU_x/P_x > MU_y/P_y$, the opportunity cost of not consuming good x is greater than the opportunity cost of not consuming good Y so we consume X.

Applying the Theory of Choice to the Real World

The three assumptions underlying the theory of rational decision making place limits on the use of the theory.

Those assumptions are:

1. Decision are costless.
2. Tastes are given.
3. Individuals maximize utility.

Behavioral economists question all three assumptions.

Assumption #1: Decision Making Is Costless

The costs of deciding among hundreds of possible choices may lead us to do some things that seem irrational.

Most people may use **bounded rationality** which is rationality based on rules of thumb.

- “You get what you pay for” is the implication that high price equals high quality.
- “Follow the leader” leads to focal point equilibria in which a set of goods is consumed because they have become focal points to which people have gravitated.

Assumption #2: Tastes are Given

- Implicit in the theory of rational choice is that utility functions are given, not shaped by society.
- “Given tastes” is the assumption on which an economic analysis is conducted.
- Tastes are often significantly influenced by society.

Conspicuous consumption is the consumption of goods not for one's direct pleasure, but to show off to others.

Assumption #3: Individuals Maximize Utility

People may not behave rationally in practice.

Behavioral economics have found through experiments that many people do not maximize utility.

The experiment of the **ultimatum game** shows that people care about fairness as well as income.

Experiments also reveal a bias where individuals' actions are influenced by the current situation, even when that reasonably does not seem to be very important to the decision.

Ultimatum Game Example

- Two people are given \$10 to split.
- First person decides how to split it but only gets the money if the second person agrees.

Utility maximization: First individual should keep most of the money (say \$9.90) and give a small amount (\$0.10) to the other person.

Second person should accept because \$0.10 is better than nothing.

Real world experiments tell a different story:

- First person typically offers a split close to 50-50.
- Second person typically rejects an offer that isn't 50-50.
- People have a sense of fairness in making decisions.

Chapter Summary (1 of 3)

Total utility is the satisfaction obtained from consuming a product; Marginal utility is the satisfaction obtained from consuming one additional unit of a product.

The principle of diminishing marginal utility states that after some point, the marginal utility of consuming more of the good will fall.

The principle of rational choice is: $MU_x/P_x > MU_y/P_y$, choose to consume more of good x. If $MU_x/P_x < MU_y/P_y$, choose to consume more of good y.

Utility is maximized and equilibrium reached when: $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

Chapter Summary (2 of 3)

Unless $MU_x/P_x = MU_y/P_y$, an individual can rearrange his or her consumption to increase total utility.

The law of demand and the law of supply can be derived from the principle of rational choice.

If you're in equilibrium and the price of a good rises, you'll reduce your consumption of that good to reestablish equilibrium.

The law of demand is based on the income effect and the substitution effect.

If your wage rises, the marginal utility of the goods you can buy with your wage will rise and you will work more to maximize utility.

Chapter Summary (3 of 3)

Opportunity cost is essentially the marginal utility per dollar one forgoes from the consumption of the next-best alternative.

To apply economists' analysis of choice to the real world, we must carefully consider, and adjust for, the underlying assumptions, such as costlessness of decision making and given tastes.

Behavioral economists argue that the assumptions of the theory of choice, costless decision making, given tastes, and utility maximization may not always apply when people make decisions

The ultimatum game suggests that people care about fairness as well as total income. The status quo bias suggests that actions are based on perceived norms.