Household Consumption Behavior, Utility and Rational Choice

1. What is “utility”? What constraints affect consumers as they try to maximize their utility?

ANSWER: Utility is satisfaction or welfare. Households attempt to maximize their utility subject to their limited income. Society often puts legal restraints on households’ utility maximization, and there may be social constraints as well.

2. Define and clearly distinguish between total utility and marginal utility. Are most choices affected by total utility or marginal utility?

ANSWER: Total utility is the total satisfaction obtained from consuming a commodity or commodities. Marginal utility is the CHANGE IN satisfaction from consuming ONE UNIT more or less of a commodity.

Real choices are rarely determined by total utilities. Most choices involve consuming a little more or a little less of some commodity (marginal utility), rather than being all-or-nothing alternatives.

3. The basic hypothesis of utility theory is the Law of Diminishing Marginal Utility. What is this Law, and what does it mean? Using a chart (naming the good, quantity bought, total utility, and marginal utility), illustrate how your consumption of a certain good follows the Law (assume utility can be measured). Is utility actually measurable?

ANSWER: The Law of Diminishing Marginal Utility: After a certain point has been reached, the utility that a household derives from successive units of a commodity during a given time period will diminish as total consumption of the commodity increases, ceteris paribus (holding constant the consumption of all other goods). In other words, after you have consumed a certain number of units of the commodity within a given time period, each ADDITIONAL unit of the commodity will give you less and less ADDITIONAL satisfaction (marginal utility for the commodity falls). This Law does not mean that you derive less and less total utility as you consume more of a good (although that could happen in an extreme situation, where marginal utility is negative). As long as marginal utility is positive (even if it is decreasing), total utility is increasing with increased consumption of the commodity.

Utility is not measurable in the sense that a person’s weight can be measured. Utility can be ranked (most satisfaction, second-most satisfaction, … least satisfaction), but it cannot be used to compare the satisfaction of two or more different people, since it is so subjective.

<table>
<thead>
<tr>
<th># of Candy bars in one day</th>
<th>Total Utility</th>
<th>Marginal Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>25</td>
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<tr>
<td>1</td>
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4. Is marginal utility ever negative? What would this mean?

ANSWER: Yes, negative marginal utility means that increasing consumption of the good is actually reducing your total satisfaction. No consumer would make a rational choice to consume so much of a good in a given time period that its marginal utility would be negative. Sometimes we make mistakes, though, and due to incomplete information or poor judgment consume a good to the point at which its marginal utility is negative.

5. Give the equation demonstrating the utility-maximizing condition for a consumer. Explain why a consumer does not maximize utility simply by equating the marginal utilities of all the goods consumed.

ANSWER:

\[
\frac{MU(X)}{P(X)} = \frac{MU(Y)}{P(Y)}
\]

for ALL goods X and Y

Different commodities have different prices, representing different opportunity costs. We are not only concerned with the satisfaction we get from each good purchased, but also with its price. “Dollars” are our unit of comparison.

If the marginal utilities of two goods are equal, but the price of one good is $1 per unit and the price of the other is $100 per unit, the consumer can increase his/her total utility by buying one less unit of the high-priced good (thereby saving $100) and using the money to buy up to 100 units of the low-priced good. The first additional unit of the low-priced good will give you as much satisfaction as the single unit of the high-priced good you gave up (by definition, since their marginal utilities are equal), and the other additional 99 units of the low-priced good will increase your total satisfaction above what it was before.

Consumers maximize utility by consuming goods in quantities such that the marginal utility PER DOLLAR is equal for every commodity consumed. If it costs twice as much, it must give you twice as much additional satisfaction for you to purchase it.

6. Using the above equation, suppose the price of one good falls. Explain why and how a utility-maximizing consumer will alter his or her consumption pattern.

ANSWER:

\[
\frac{MU(X)}{P(X)} < \frac{MU(Y)}{P(Y)}
\]

Starting from equilibrium (maximizing total utility), if the price of Good Y falls, the consumer will be facing the situation at left. Consumers usually have no control over the prices of the goods they buy, but they can control their marginal utilities by buying more or less of the good (due to the Law of Diminishing Marginal Utility). This household should reallocate its spending away from Good X and purchase more of Good Y. As it buys less X, the marginal utility from consuming X will increase (bringing the household closer to equilibrium). As it buys more Y, the marginal utility from consuming Y will decrease (bringing the household closer to equilibrium). When the price of Good Y decreases, the household can increase its total utility by buying more Y and less X.

7. If a household’s income increases, what is likely to happen to its spending pattern? What will this do to the equilibrium marginal utilities it receives from each good? What will happen to total utility?

ANSWER: As income increases, relative prices have not changed but the household will tend to purchase more of all normal goods. For this reason (and the Law of Diminishing Marginal Utility), equilibrium marginal utilities will be lower than before. Total utility, however, will have increased.

Because of the Law of Diminishing Marginal Utility, lower marginal utilities indicate greater total utility due to greater consumption of the goods (as long as tastes have not changed). Graphically, total utility is the area under the marginal utility curve... which is greater when marginal utility is lower (as long as it is not negative).
8. If a commodity is free, how much do consumers want of it? Unlimited amounts? Infinite amounts? Explain your answer in terms of marginal utility and total utility.

ANSWER: As long as an additional unit consumed has a positive marginal utility, total utility will be increased by consuming more of the commodity. Therefore, the consumption of any free good (price is zero) will be increased to the point at which its marginal utility is zero and total utility is maximized. Consumers do not generally want unlimited or infinite amounts of any commodity within a given time period.