FYI

Utility: An Alternative Way to Describe Preferences and Optimization

We have used indifference curves to represent the consumer's preferences. Another common way to represent preferences is with the concept of *utility*. Utility is an abstract measure of the satisfaction or happiness that a consumer receives from a bundle of goods. Economists say that a consumer prefers one bundle of goods to another if one provides more utility than the other.

Indifference curves and utility are closely related. Because the consumer prefers points on higher indifference curves, bundles of goods on higher indifference curves provide higher utility. Because the consumer is equally happy with all points on the same indifference curve, all these bundles provide the same utility. You can think of an indifference curve as an "equal-utility" curve.

The *marginal utility* of any good is the increase in utility that the consumer gets from an additional unit of that good. Most goods are assumed to exhibit *diminishing marginal utility*: The more of the good the consumer already has, the lower the marginal utility provided by an extra unit of that good.

The marginal rate of substitution between two goods depends on their marginal utilities. For example, if the marginal utility of good X is twice the marginal utility of good Y, then a person would need 2 units of good Y to compensate for losing 1 unit of good X, and the *MRS* equals 2. More generally, the marginal rate of substitution (and thus the slope of the indifference curve) equals the marginal utility of one good divided by the marginal utility of the other good.

Utility analysis provides another way to describe consumer optimization. Recall that, at the consumer's optimum, the marginal rate of substitution equals the ratio of prices. That is,

$$MRS = P_X/P_Y.$$

Because the marginal rate of substitution equals the ratio of marginal utilities, we can write this condition for optimization as

$$MU_X/MU_Y = P_X/P_Y.$$

Now rearrange this expression to become

$$MU_X/P_X = MU_Y/P_Y.$$

This equation has a simple interpretation: At the optimum, the marginal utility per dollar spent on good X equals the marginal utility per dollar spent on good Y. If this equality did not hold, the consumer could increase utility by spending less on the good that provided lower marginal utility per dollar and more on the good that provided higher marginal utility per dollar.

When economists discuss the theory of consumer choice, they sometimes express the theory using different words. One economist might say that the goal of the consumer is to maximize utility. Another economist might say that the goal of the consumer is to end up on the highest possible indifference curve. The first economist would conclude that at the consumer's optimum, the marginal utility per dollar is the same for all goods, whereas the second would conclude that the indifference curve is tangent to the budget constraint. In essence, these are two ways of saying the same thing. ■