A Note on Giffen Goods

Peter G. Klein

Revised 5 November 2009

Both the Austrian causal-realist and neoclassical approaches to demand begin with an ordinal preference ranking. But the understandings of marginal and total utility are completely different. For Menger, marginal utility applies only to discrete units of a homogenous stock of a good. The fourth apple is allocated to a lower-valued use than the third apple, and so on. The law of demand follows from the fact that additional units of a homogenous good are used to satisfy lower-ranked ends. Note that if an agent possesses a set of unique goods—one apple, a piece of candy, a dollar bill, an iPod, etc.—he can rank them ordinally, but cannot assign marginal utilities to specific goods, since there are no "supplies"—multiple, homogeneous units—of apples, candy, money, and iPods.

 The modern neoclassical approach, as described for example in Debreu (1959), begins with consumers who rank not discrete units of goods, but n-tuples or "bundles" of all goods in existence. Bundle A represents one apple, one piece of candy, and one iPod. Bundle B represents two apples, one piece of candy, and one iPod. Bundle C includes one apple, two pieces of candy, and one iPod, and so on. For all possible bundles i and j (and the set of feasible bundles depends on assumptions about divisibility) the consumer is assumed to prefer i to j, to prefer j to i, or to prefer neither i nor j. Hence the concept of indifference: if Bundle D is neither preferred nor dis-preferred to Bundle E, then the consumer is indifferent between D and E (and, if we assume a continuous space of bundles, they lie on the same indifference curve).

In this model, prices are expressed as exchange ratios between elements of the bundles. Given an amount of "income," which when combined with a given ratio of relative prices gives a set of bundles that the consumer can afford, we can identify which bundle or bundles yield the greatest benefit (i.e., no other bundle is both affordable and preferred to the optimal bundle). This notion of ranking bundles is necessary to decompose the effects of relative-price changes into the familiar substitution and income effects. The notion of a substitution effect assumes that relative-prices changes combined with Hicksian income transfers can be represented by a movement along an indifference curve.

Note that if the consumer is ranking bundles, not individual units of goods, and the bundles are heterogeneous, then Menger's concept of marginal utility does not apply. The consumer attaches a total utility to each ranked good— i.e., to each bundle—but there are no marginal utilities of individual units of goods, because we have no ordinal rankings of individual goods, only bundles. Hicks of course abandoned the concept of marginal utility altogether in favor of the marginal rate of substitution (the rate at which the consumer would substitute i for good j or the slope of the indifference curve). But Mengerian analysis concerns preferences that can be demonstrated in action. Because indifference among ranked goods (bundles) cannot be demonstrated in action, there is no place for a marginal rate of substitution, and no such thing as a substitution effect that can be analyzed independently of an income effect.

Of course, there is a general notion of substitution at the margin in causal-realist analysis, in the sense that the exchange of a unit of *A* for a unit of *B* indicates that the actor prefers the marginal unit of *B* to the marginal unit of *A*. If one wants to call that a substitution effect and say "the marginal utility of *B* is greater than the marginal utility of *A*," well, OK, but that's a misleading way to put it, for it implies continuity, infinitesimally small units, etc. It's better to say "the utility of a marginal unit of A exceeds the utility of a marginal unit of B," which makes it clear that the adjective "marginal" refers to the units, not the "utilities."

(More generally, causal-realist analysis assumes a kind of equilibration at the margin in the sense that, at the market-clearing price, each buyer values the marginal unit he has purchased more than the price and each seller values the marginal unit he withholds from the market more than the price. Likewise, the consumer arranges his consumption bundle such that the last unit of each good he purchases is valued more highly than the price of that good. In other words, the consumer allocates expenditures across goods to bring together, as closely as possible, the marginal utility of each good with the marginal utility of its price—something that is awkward to show using indifference-curve analysis, where one has to say that the ratio of the marginal utilities of two goods equals the ratio of their prices. If prices change, the consumer will adjust his consumption bundle accordingly. But the decomposition of the effects of price changes into separate substitution and income effects does not flow naturally from this formulation. Wicksteed's fruit-market example provides the most thorough discussion of all this.)

In short, in causal-realist analysis we go from an ordinal preference ranking among homogenous goods (gallons of water, bushels of wheat, whatever) to the law of diminishing marginal utility to the individual's downward-sloping demand curve to the downward-sloping market demand curve to the conclusion that an increase in the supply of a good on the market leads to a reduction in price and an increase in quantity demanded. The neoclassical approach starts with rankings of heterogeneous bundles of goods, leading to an indifference map in which marginal rates of substitution could be increasing, decreasing, constant, or undefined (as with L-shaped indifference curves) and a conditional law of demand in which a decrease in price may or may not lead to an increase in the quantity demanded, depending on the sign of the income effect and the relative magnitudes of the income and substitution effect. A Giffen good can only arise when the law of demand is derived in this way, and hence it plays no role in Austrian-style causal-realist analysis.

How, then would would a causal-realist economist handle Marshall's peasant who, faced with an increase in the price of potatoes, can no longer afford meat and has to increase his consumption of potatoes? (Marshall actually used bread, but potatoes works better here.)

E.g., suppose potatoes are $1 each and meat is $6 per pound and, at those prices, the consumer chooses one pound of meat and 4 potatoes, spending $10, which is all he can afford. If the price of potatoes rises, say, to $2 each, then if he continues to buy his pound of meat he can only afford 2 potatoes. But this doesn't give him enough nourishment, so he prefers 5 potatoes and no meat at the higher price of potatoes. This implies that value scale, in decreasing order of preference, is

A. 4 potatoes and 1 pound of meat
B. 5 potatoes
C. 2 potatoes and 1 pound of meat
D. $10

Clearly there is no violation of Menger's law of demand here. At *p*_potato = $1 the peasant chooses bundle *A* and at *p*_potato = $2 he chooses bundle *B*. But *A* and *B* don't represent different quantities of the same good. Even in this case the law of demand must hold. E.g., suppose the supermarket sells Hormel Ready-to-Serve Meat-and-Potatoes Dinners, each containing a pound of meat and 4 potatoes. Suppose if the consumer has only one package he will eat it, if he has two he'll eat the first and freeze the second, if he has three he'll eat the first, freeze the second, and give the third to his dog, and so on. If the price of the Hormel dinners falls he will purchase more Hormel dinners, ceteris paribus, giving him the usual downward-sloping demand curve, once the units are properly defined. Note that this analysis doesn't depend on potatoes being a normal or inferior good, the proportion of his total spending going to potatoes, or other parts of the Giffen story.