

Comments on "Econometric Models for Probabilistic Choice among Products"

McFadden's exposition (this issue) on the models of probabilistic choice and how they relate to consumer behavior in economic markets is a commendable piece of work which is attuned to the spirit and theme of this conference. Consumer behavior is clearly an area that is of interest to both the marketer and economist alike, but the economists, long regarded as outspoken guardians of the truth in such matters, have been uncharacteristically silent when it comes to the practical problem of translating economic theory and implications into useful marketing strategies. As a result, the marketing profession has more or less been bogged down in a quagmire of pseudoscientific, ad hoc theories of consumer behavior, searching for a meaningful paradigm in which to analyze the brand preferences of consumers. Perhaps the best illustration of this has been the contagious application of the so-called attitudinal-belief models of consumer behavior inspired by the studies of Rosenberg (1956) and Fishbein (1967a, 1967b). In any case, the probabilistic choice models described by McFadden provide an excellent starting point for the analysis of consumer behavior that should be acceptable and conceptually pleasing to members of both professions.

In its simplest form, the theory of random choice postulates that each member of a population of utility-maximizing consumers possesses a utility function $U(s, x) = v(s, x) + e(s, x)$, where s is a vector of individual attributes, x is a vector of product attributes, v is a nonstochastic function reflecting "representative" tastes, and e is a function that varies randomly in the population. Assuming that the choice set of interest is $B = (x_1, x_2, \dots, x_n)$ and that e values are independently and identically distributed over B with the extreme value distribution, we can derive for the probability that an individual drawn at random from the population will choose x the expression

$$p(x | s, B) = e^{v(s, x)} / \sum_{y \in B} e^{v(s, y)}.$$

Given a parametric specification of the utility indicator v , the expression for p can be used in conjunction with the multinomial probability model to obtain parameter estimates and ultimately a basis on which to predict consumer behavior given a set of observed individual and product attributes.

Apparently, the choice probabilities are invariant to monotonic, increasing transformations of the U function above. (See McFadden [1973] for an obscure discussion of this point.) However, it does not seem likely that the empirical estimates of the selection probabilities will remain invariant to the choice of v function above, and this worries me a little. Perhaps it makes little difference numerically, but this is not immediately obvious.

The only other point I would like to make is to lend my support concerning McFadden's discussion on the design and use of attitude and judgment scales in forecasting market behavior. His remarks on the necessity of devising scales that (1) are tied to the physical attributes of the products and (2) provide explanatory power in probabilistic choice models should be required reading in all marketing programs.

References

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