



# NEW BOOKS IN REVIEW

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QUANTITATIVE MODELS IN MARKETING RESEARCH,  
Philip Hans Franses and Richard Paap, Cambridge, UK:  
Cambridge University Press, 2001, 206 pages, \$45.00.

Modeling customer purchase behavior is an important task for marketing scientists. Unlike market response models, which tend to be amenable to estimation by traditional regression analysis, customer behavior models tend to have structures that require specialized econometric techniques. In particular, they may require nonlinear regression models in which the response outcomes are discrete and the error terms are not normally distributed. For example, modeling whether a household will buy or not buy a product involves a qualitative dependent variable: a dummy variable that might equal 1 for purchase and 0 for no purchase. Such models, as is well known, require techniques such as logit and probit. The dependent variable need not be binary but could be polychotomous. Categorical variables with many choice categories require the use of multinomial logit (if the independence of irrelevant assumptions can be assumed) or multinomial probit (otherwise). If these categories also have order—for example, outcomes of a salesperson's call in response to a lead might be grouped into sale, trial, future prospect, or no interest—ordered logit or probit would be necessary. Modeling the number of units of a brand bought by a household involves non-negative integer values. The most common model for such count data is the Poisson model.

Available data on the dependent variable may be limited in their range. For example, data on the price paid for a new automobile are available only for those who bought a new car. Samples with limited dependent variables can be classified into two general categories depending on whether the values for the explanatory variables for the missing dependent variable data are known, in which case it is called a *censored regression model*, or are not known, in which case it is called a *truncated regression model*. The best-known technique for censored data is the Tobit model. There can also be incidental truncation that results in nonrandom sampling. This requires more general models incorporating sample selection. Finally, the length of time between events, say, interpurchase time, can be examined. The relevant models are called *duration models* and the length of time is called a *spell*. Discussion usually takes place in terms of the hazard function, which gives the probability that the spell will end at time  $t$  given that it has lasted to time  $t$ . Explanatory vari-

ables affect the level and/or shape of the hazard function. Duration data are often censored.

With one exception, these phenomena are the domain of *Quantitative Models in Marketing Research*. The authors make a conscious decision to exclude count-data/Poisson models. I would like to have had a chapter on this topic for completeness. In any event, the title of the book is overly broad. A more precise title might be *Marketing Models with Qualitative or Limited Dependent Variables*. The phenomena are specialized advanced topics, which are usually covered in econometrics textbooks but typically not until near the end. For example, they are addressed in the last chapter of Johnston and DiNardo (1997) and in the last two chapters of Greene (2000).

*Quantitative Models in Marketing Research* begins with an introductory chapter and follows with a chapter on marketing performance data (i.e., the dependent variable). Depending on the nature of the dependent variable—continuous, binomial, unordered multinomial, ordered multinomial, limited (censored or truncated), or duration—an appropriate econometric technique receives a chapter of coverage. The chapter on the traditional continuous dependent variable is mainly to set the stage for the following chapters.

Each of these chapters has five sections. The first section discusses the specification of the relevant model and the interpretation of its parameters. The second section describes parameter estimation by the maximum likelihood method. The third section covers diagnostics, model selection, and forecasting. The fourth section provides a worked empirical example. The fifth section explores advanced topics. These advanced topics often involve unobserved parameter heterogeneity or the effects of sample selection.

The main strength of the book is the detailed worked examples. The analyses were done using EViews ([www.eviews.com](http://www.eviews.com)), but researchers more familiar with LIMDEP ([www.limdep.com](http://www.limdep.com)) could easily use it to obtain the same results. The data as well as errata for the book are available from the authors' Web site. The level of analysis is the household. The exception to this is the chapter on the continuous dependent variable, which is at the market level. This example would more appropriately be used in conjunction with Hanssens, Parsons, and Schultz (2001).

The main weakness of the book is the lack of discussion of applications that appear in the marketing literature. Selected works appear simply as citations. The consequence is that the book does not adequately convey the importance

and power of this set of techniques. Perhaps the authors could address this weakness with an annotated bibliography on their Web site.

Who is the target market for the book? The authors say academics (as a reference book) and, depending on the sections of the chapter used, undergraduate and graduate students in marketing research and econometrics. The authors comment that marketing managers are not the most likely users of these models. They further note that they assume some knowledge of basic matrix algebra and of elementary statistics on the part of the reader.

Although European students who often come out of business economics tradition may be able to use this book, American students and others using the U.S. model for business education probably cannot. This is but one more indication that the grand experiment, even in programs with a more analytical approach, in using the cookbook/spreadsheet approach to teaching business statistics is an abject failure. The statistical community in the past few years has pointed out that spreadsheets are not statistical programs and should not be used as such. The cry is, "Friends don't let friends use Excel for statistics." Even students in dedicated Master's of Market Research programs probably would have difficulty with the material in the book. This may point out the need for a few dedicated Master's of Marketing Science programs. In any event, the book could well be used as part of a doctoral seminar. The instructor would need to supplement the book with some readings from the literature. One recent source of papers by various authors on econometric applications in marketing, including discrete choice, is Franses and Montgomery (2002).

The senior author is a well-known and highly respected applied econometrician working on marketing problems.

*Quantitative Models in Marketing Research* reflects the authors' expertise and experience to provide concise coverage of an underused set of useful marketing tools. I recommend that marketing scientists have this book on their bookshelves.

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