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Book reviews

Reviews that appear in IJF describe and evaluate books about new developments in research on forecasting. They cover theory, practical applications, and methodology.

New books that deal with any of the social and behavioral sciences are reviewed if they contribute to the advancement of forecasting.

Suggestions of books for review are welcomed; please send them to the editor listed below.

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Forecasting, time series, and regression: an applied approach, 4th edition, Bruce L. Bowerman, Richard T. O'Connell, Anne B. Koehler, Duxbury Press, 2005, 686 pp., ISBN: 0-534-40977-6

Bruce Bowerman, Richard O'Connell, and Anne Koehler, in their fourth edition of *Forecasting, Time Series, and Regression: An Applied Approach*, provide all the necessary tools to engage in meaningful time series and forecasting work by showing extensive applications, with detailed explanations of the results of the methods. Additionally, the applications in this book address a wide range of disciplines such as marketing, finance, production scheduling, process control, and strategic management. This book would be appropriate for advanced undergraduates in business, engineering, and economics as well as MBA students on quantitative methods courses. It would

also serve as a valuable reference for practitioners of forecasting. The prerequisite for using this book would be a solid understanding of descriptive and inferential statistics and basic algebra.

Part I is an introduction to forecasting (Chapter 1) and gives a brief review of descriptive and inferential statistics (Chapter 2). Part II provides a comprehensive study of regression analysis by presenting a myriad of concepts and applications using MINITAB, SAS, JMP, and EXCEL. In fact, these chapters delve further into regression analysis than the previous editions, and the depth of the discussion gives the reader a firmer grounding in regression analysis and its applications.

After reading Parts I and II, the reader or student should be comfortable doing applied work. Part III discusses the methods of time series regression (modeling trends, autocorrelation, and seasonal variation), decomposition methods (additive and multiplicative methods and the X-12 ARIMA Seasonal Adjustment method), and exponential smoothing methods (simple exponential smoothing, Holt–Winters methods, damped trends, and others). The presentation of these methods is coherent and includes abundant examples. The most notable feature in this section is the chapter on exponential smoothing, which provides modern methods and techniques, and the implementation of these methods using spreadsheets. The use of spreadsheets to perform exponential smoothing is a novel approach and shows that not all statistical analysis requires the use of extravagant software. Textbooks in statistics and forecasting often treat exponential smoothing as intuitive models without any underlying statistical theory; however, the authors provide a statistical foundation of exponential smoothing using the current research of state space modeling with a single source of error, a method espoused by

Ord, Koehler, and Snyder (1997) and Hyndman, Koehler, Snyder, and Grose (2002). Additionally, the formulas for the prediction intervals used in exponential smoothing are also based on statistical models using state space modeling. The presentation of the foundation for the exponential smoothing using statistical models leads to a nice transition to state space modeling for each method of exponential smoothing.

Part IV presents the Box–Jenkins methodology of time series analysis, and the authors stress the following four steps in this approach: identification, estimation, diagnostic checking, and forecasting. Chapter 9 includes the nonseasonal Box–Jenkins models by discussing the identification of an appropriate empirical model. More specifically, the chapter discusses the stationary and nonstationary time series, sample and partial autocorrelation, rudiments of forecasting and identifying Box–Jenkins models. Chapter 10 then completes the remaining three steps of Box–Jenkins modeling: estimation, diagnostic checking, and forecasting. The chapter concludes with a discussion of the implementation of exponential smoothing models and a detailed illustration of the Box–Jenkins modeling to actual data.

Chapter 11 introduces the seasonal Box–Jenkins modeling. A nice feature here is avoiding the mention of the backshift operator which often accompanies early discussion in seasonal time series models. Delaying that discussion until Chapter 12 allows a reader to absorb the concepts in nonseasonal and seasonal Box–Jenkins modeling and the introduction to Box–Jenkins error term models in time series regression without having to consider these operators.

The concluding chapter presents the backshift operator and applies it to the Box–Jenkins modeling process and then proceeds to intervention models and transfer function models, but it does not cover multivariate modeling in the presentation of the transfer function models.

This book was awarded the Outstanding Academic Book by *Choice* magazine in its first edition and rightfully so. In fact, this edition still demonstrates the authors' clarity of exposition in the discussion, the doing, and the interpretation of forecasting. The presentation and the explanations are outstanding, and the discussion provides the necessary tools to begin applied forecasting analysis. To reinforce the applications, the textbook comes with a CD with all of

the necessary data. These data are provided in a multitude of formats: SAS, E-Views, EXCEL, JMP, STATA, SPSS, and S-Plus. If preferred, these data could also be downloaded from the data library of the Web site of the textbook. Each chapter contains a variety of applied problems, some of which require the preparation of estimates using software. These exercises were revised for this edition to include the more realistic scenarios encountered in various business disciplines. Also useful is the appendix with directions and programs to implement regression and the Box–Jenkins methodology in SAS version 8. Such a reference would be most beneficial for those who are required to use, or only have, the SAS software for statistical analysis. Overall, this book provides a comprehensive and user-friendly introduction to forecasting and would give a student of the topic a valuable background.

References

- Hyndman, R. J., Koehler, A. B., Snyder, R. D., & Grose, S. (2002). A state space framework for automatic forecasting using exponential smoothing methods. *International Journal of Forecasting*, 18, 439–454.
- Ord, J. K., Koehler, A. B., & Snyder, R. D. (1997). Estimation and prediction for a class of dynamic nonlinear statistical models. *Journal of the American Statistical Association*, 92, 1621–1629.

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Market response models: econometric and time series analysis (second edition), Dominique M. Hanssens, Leonard J. Parsons, & Randall L. Schultz, *International Series in Quantitative Marketing*, Kluwer Academic Publishers, London, 2002, ISBN: 1-4020-7368-2. Soft cover, 501 pages, £38/\$59.95

This is a very comprehensive account covering many aspects of both marketing and econometrics. It