each chapter are designed for readers with a strong statistical background and are primarily theoretical; only a few datasets are given. In the discussion at the end of each chapter, the author provides brief computational notes to refer the reader to various software packages that may be used to apply the methods in the chapter to data. The lack of software integration might limit the ability of this book to be used as the sole text in a course on survival analysis. This text would be best suited for a theoretical course in survival analysis. However, if supplemented with material from a software-oriented book, such as Allison (1995), one could create a more applied course using this text. Due to the aforementioned omission of many reliability topics, this book is limited as a text for a reliability course.

The author's first goal of creating an excellent reference book is clearly achieved and the goal of creating a text for a first graduate course is also achieved. The first edition of this book, published in 1982, has become a standard reference for many statisticians working in survival analysis; the second edition is sure to continue the legacy. For a unified and thorough reference of classical theory and models, this book is a excellent choice.

E. BOONE
University of North Carolina at Wilmington

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Regression Models for Time Series Analysis.

Benjamin KEDEM and Konstantinos FOKIANOS. New York: Wiley, 2002. ISBN 0-471-36355-3. xiv + 337 pp. $84.95 (H).

Regression models have served a vital role in the development of time series analysis. The use of regression methods in a temporal context can be traced back to over a century ago, when Schuster (1898) proposed sinusoidal regression as a means to detect "hidden periodicities" in meteorological data. Models with structural components for trend and seasonality have been used pervasively for many decades, particularly in econometrics. In the mid 1970s, the seminal text of Box and Jenkins (1976) popularized autoregressive integrated moving-average (ARIMA) models. These models remain the central focus of time domain methodologies.

During the past two decades, the evolution of computing has facilitated the rapid development of versatile regression modeling frameworks that have expanded the breadth of time series analysis. This book provides an excellent overview of many of these modern frameworks.

The book is divided into seven chapters, the first four of which cover the use of generalized linear models (GLMs) in time series settings. These chapters form the centerpiece of the book and could easily serve as a text on their own. Chapter 1 begins with a gentle introduction to partial likelihood, which provides the fundamental instrument for the application of GLM methodologies in the context of serially dependent data. Subsequent material shows how familiar tools and techniques that arise in the study of traditional GLMs translate to the temporal setting: for example, estimation, hypothesis testing, goodness of fit and deviance, quasi-likelihood, and generalized estimating equations. Readers familiar with GLMs will find it reassuring that the GLM framework is so amenable to time series analysis once the partial likelihood is employed.

Chapters 2 through 4 separately consider the modeling of binary, categorical, and count time series. These chapters conclude with substantive applications to real data. The datasets are skillfully chosen to represent a wide diversity of areas, for example, meteorology, geophysics, economics, medicine, and sports.

The GLM portion of the book is both comprehensive and varied: essential tools and procedures are introduced and explored, interesting (and nontrivial) examples are presented, and asymptotic theory is developed in a fairly rigorous fashion. The applications are particularly strong: rather than merely provide numerical illustrations of relevant methodological tools, they address many of the questions and quandaries practitioners routinely face when confronted with real data.

Chapter 5 covers a collection of regression-based time series models. Integer autoregressive and integer moving-average models are presented in some depth. Certain other frameworks are considered more briefly, including discrete autoregressive moving-average models, mixture transition distribution models, hidden Markov models, variable mixture models, and autoregressive conditionally heteroscedastic models. Chapter 6 discusses state-space models and reviews fairly recent innovations in estimation, filtering, and smoothing. Chapter 7 covers prediction and interpolation, mainly in a spatial context. Special attention is given to Bayesian spatial prediction via the Bayesian transformed Gaussian (BTG) algorithm.

The authors claim (p. xiv) that the book "should be accessible to anyone who is familiar with basic modern concepts of statistical inference, corresponding roughly with the master's degree level." This claim seems fair. However, prior exposure to more traditional time series analysis (in particular, ARIMA modeling) seems necessary for a full appreciation of the majority of the covered topics. Furthermore, a full comprehension of the more theoretical material requires a background in advanced mathematical statistics, as well as some exposure to stochastic processes and measure theoretic probability. Whereas the book includes problem sets at the end of each chapter, it could easily be used as a textbook for a second course in time series analysis geared toward doctoral students and advanced master's students. To help keep the development self-contained, the authors have included tutorial sections on certain topics (e.g., Markov chain Monte Carlo methods, stationary random fields, and kriging), as well as a substantive appendix on stationary processes. The book also contains an extensive collection of references and interesting historical discussions.

My criticisms of the book are both minor and few. Given the expansive nature of the topic area, the authors clearly needed to make some tough decisions as to which topics should be discussed in detail and which should be briefly reviewed. Some readers may feel that certain subjects are slighted, particularly in Chapter 5. Also, the final chapter on prediction (and interpolation) focuses almost exclusively on a particular perspective: Bayesian spatial prediction via the BTG. The authors defend this focus by arguing that their framework is both flexible and general, thereby subsuming a large class of specialized prediction problems of practical interest (e.g., prediction for short series, for irregularly observed series, and for non-Gaussian series).

In summary, this book provides a much needed overview of modern regression methods in time series analysis. The presentation is, in general, both accessible and illustrative. Professor Kedem has previously written two worthwhile texts on time series analysis (1980, 1994); his skill and experience as an author permeates the exposition. He and Professor Fokianos have written a book that should serve as a valuable resource to students, researchers, and practitioners. The text reflects a deep appreciation of both theory and applications, as well as a comprehensive understanding of a set of modeling frameworks that are becoming increasingly integral to modern time series analysis.

Joseph CAVANAUGH
The University of Iowa

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