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Book review

Long Memory Time Series Analysis, G. S. Dissanayake, H. Doosti. CRC Press, Boca Raton: (2026). p. 172, ISBN: 978-1-032-62696-3.

The book is primarily designed as a course textbook for advanced undergraduates. The content begins with short-range stationary linear models, such as autoregressive (AR), moving average (MA), and autoregressive moving average (ARMA) in Chapters 1 to 3. From Chapters 4 to 7, it considers long-range stationary linear models, such as autoregressive fractionally integrated moving average (ARFIMA) and Gegenbauer ARMA models. The book provides a comprehensive survey with limited detail, but it includes necessary references. In the long-range-dependent models, the authors could have considered adding a discussion of estimators for the memory parameter in the ARFIMA model. The concept of bias estimation of the memory parameter was also not explored. Chapter 8 presents hypothesis tests for fractional-order vs. integer-order differencing, where $I(0)$ and $I(1)$ are special cases. Chapter 9 considers a nonparametric regression for time series analysis. The treatment of long-memory time series in the nonparametric setting is not trivial. Suppose the data are simulated from an ARFIMA model; what are the advantages of this nonparametric regression tool compared to the parametric linear toolbox? Perhaps when the data-generating process differs from the chosen model, nonparametric regression offers a robust alternative to model misspecification. Chapter 10 considers the linear process models with GARCH errors to model heterogeneous variance. The example considered is the ARMA-GARCH framework, its estimation, and computational code. I was hoping for a discussion of their parameter constraints to help readers better understand the admissible ranges of all involved parameters.

I like the book because it shows how to use statistical programs across various platforms, mainly R. It also provides exercise questions with answers for a course. The typesetting could be improved, especially when R code is shown. There were instances of incorrect typesetting, such as pp. 153–154. Adding more empirical applications would increase readability for researchers and practitioners.

Overall, I enjoyed reading and reviewing this book, and I feel it provides a nice overview of linear, nonlinear, and nonparametric tools for analyzing univariate time series. Its extension to multivariate and functional time series remains to be investigated. It can serve as a reference for undergraduate and graduate students working on time series inference. Currently, the book does not discuss forecasting in detail, particularly how these linear and nonlinear time series tools can be applied to produce point and interval forecasts. In this regard, one may consult the textbook titled *Forecasting: Principles and Practice* by Rob J. Hyndman and George Athanasopoulos.

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