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BOOK REVIEW

Robert H. Shumway and David S. Stoffer: Time series analysis and its applications with R examples, 2nd edn.
Springer, 2006

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This is the second edition of a text first published in 2000 and reviewed favorably in *ASTA* by Schmid (2003). The book is intended as a course text for a graduate-level time series analysis class. It presents a very readable introduction to time series, and uses numerous examples based on nontrivial data to illustrate the methods. All chapters contain a problem section.

For this second edition, the authors integrated the freeware computing package R. Because many practical time series problems involve modification of standard code, users will appreciate the software's inclusion. Much of the code and most of the time series used in the text can be downloaded from the authors' Web sites:

http://www.stat.ucdavis.edu/~shumway/tsa.html and
http://www.stat.pitt.edu/~stoffer/tsa.html.

Additionally, the time series analysis package ASTSA, which is a nice program written by McQuarrie and Shumway (1994), can still be downloaded (as freeware) from these Web sites.

The text has been reorganized a little for the second edition and the exposition has been expanded and upgraded in places, with more details filling previous gaps. The table of contents now reads:

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Additional Time Domain Topics
State–Space Models
Statistical Methods in the Frequency Domain

In the course of exposition modern topics are covered, too: Long-memory ARMA models, fractional differencing, GARCH models, stochastic volatility, wavelets, dynamic linear models with switching to name the more important ones. Nevertheless, econometricians will miss some of their favorites, especially unit root tests and cointegration. For these topics the text by Pfaff (2005) offers a guide to analyse time series with R.

Altogether, the book offers a balanced and comprehensive treatment of both time and frequency domain methods with accompanying theory. Compared to other established texts, it presents a more modern slice of the discipline.

References

Pfaff, B. (2005): Analysis of Integrated and Contegrated Time Series with R. Springer, New York
Schmid, W. (2003): In: Shumway, R.H. and Stoffer, D.S. (eds.) Review of Time Series Analysis and Its Applications. Allgemeines Statistisches Archiv, vol. 87, pp. 102–103