

BOOK REVIEWS

Analysis of Financial Time Series, by Ruey S. Tsay, 2002, New York: Wiley

Reviewer: Maurizio Pompella, University of Siena

Time-series analysis is a ground topic of traditional interest for readers dealing with economic phenomena in progress and “asset valuation over time.” *Analysis of Financial Time Series* is a good example of a class-tested book, and—if you have the requested background—a fully readable volume: a textbook of financial econometrics. Financial analysis and statistics of time series are effectively combined here in order to provide a rigorous approach, together with upgrades from the leading literature in financial econometrics. This is first emphasized in the preface where the author remarks his original contributions. These can be found in the recent developments concerning *value at risk* (VAR) literature, high-frequency data analysis, and the Markov chain Monte Carlo (MCMC) methods. Value added from a series of RATS program comes with the Chapters 3–5, and 9, but some other computer packages were also used to make calculations and carry out examples (namely, SCA and S-plus).

The book consists of three sections: the first, about univariate financial time series (Chapters 2–7); the second, concerned with multivariate analysis (8 and 9); and the third, about the above-mentioned MCMC methods (10th chapter). It is difficult to find missing topics, as the text is comprehensive. Nevertheless—just as a matter of personal preference—something more could have been included, maybe in the second section, or more emphasis on a series of subjects could have been put. Spectral analysis, for instance (treating time series as an inventory of waves with different frequency); or cross-spectral and coherence analysis. These methods are no more (they have never been, if you like) of crucial interest for the study of economic/financial time series, but they represent, in my view, an original, useful perspective.

Chapter 1 is just an introduction to financial time series.

Chapter 2 is about linear time-series analysis and applications, introducing AR, MA, and ARMA models.

Chapter 3 is dedicated to volatility modeling, from the AR Conditional Heteroschedasticity (ARCH) model, introduced with the seminal paper of Engle in 1980, onward. The fundamentals, the properties, and the weaknesses of ARCH models are dealt with at first. The generalized ARCH (Bollerslev, 1986) follows, together with the Integrated-GARCH, the GARCH-M, the E-GARCH, and a series of useful, illustrative examples. The multivariate generalization of these volatility models can be found in the second section, in the 9th chapter, whose appendix presents a significant group of computer programs to perform estimation.

The fourth chapter deeply deals with nonlinear models, and illustrates a series of examples and applications, some of them having their corresponding RATS/S-plus files in the end-chapter appendixes. The first of these provides two RATS programs to estimate nonlinear volatility models (appendix A); the second offers S-plus commands for neural networks (appendix B).

Chapters 5–7 complete the second section. The first two treat high-frequency data analysis (the 5th), and continuous time models (the 6th), respectively. On the other hand, Chapter 7, dealing with the calculation of value at risk by mean of “extreme values theory,” is probably the most interesting among them because of the novelty of the approach.

Chapter 8 opens the section—just two chapters, as mentioned—about multivariate analysis; vector autoregressive (VAR) and vector moving-average (VMA) models are illustrated here, together with the generalization of ARMA *versus* vector-ARMA. Cointegration and principal component/factor analysis close the chapter.

The last chapter (the 10th) consists of a “stand-alone” section, the third, suggesting a series of financial applications of the Markov chain Monte Carlo methodology, fast developing in the recent years.

We have explored the Web site suggested in the preface in order to get data sets and programs: a good choice, if compared with the possibility of including a CD with the text, which is now usual for most of the textbooks dealing with quantitative themes and applications. This allows in fact a continuous upgrading of contents by the author. In the Web (whose right address is now <http://gsbwww.uchicago.edu/fac/ruey.tsay/teachingfts/>), one can find a magnificent store of data sets, either used in the textbook or needed for proposed exercises, and some other downloadable files (the *errata corrige* of the book, for instance), which are a precious support to readers interested in putting in practice the explained methods. Instructors may even request solutions to exercises by e-mail.

Statistics and econometrics are the needed background, whereas a profound financial basis is not, and the most examples are friendly structured.

In conclusion, I was happy to receive this work “free of charge,” for reviewing, but I would recommend it on a pay-for basis as well.

The Science of Financial Market Trading, by Don K. Mak, Singapore: World Scientific Publishing Co.

Reviewer: Rafiqul Bhuyan, Ph.D., College of Business Administration, Midwestern State University

The Science of Financial Market Trading by Don K. Mak is an advanced-level book that addresses several methodologies related to technical analysis in trading. The audience for the book may include (1) Institutional investment analysts with graduate level academic background, (2) Fund managers, who use many external sources for trading, (3) Graduate students in the field of finance and financial economics who want to find

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