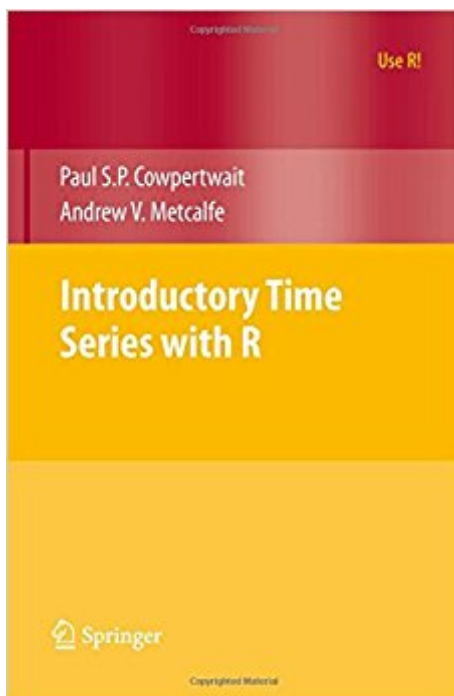


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# Introductory Time Series With R (Use R!)



## Synopsis

This book gives you a step-by-step introduction to analysing time series using the open source software R. Each time series model is motivated with practical applications, and is defined in mathematical notation. Once the model has been introduced it is used to generate synthetic data, using R code, and these generated data are then used to estimate its parameters. This sequence enhances understanding of both the time series model and the R function used to fit the model to data. Finally, the model is used to analyse observed data taken from a practical application. By using R, the whole procedure can be reproduced by the reader. All the data sets used in the book are available on the website <http://staff.elena.aut.ac.nz/Paul-Cowpertwait/ts/>. The book is written for undergraduate students of mathematics, economics, business and finance, geography, engineering and related disciplines, and postgraduate students who may need to analyse time series as part of their taught programme or their research.

## Book Information

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## Customer Reviews

From the reviews: “The book gives a very broad and practical overview of the most common models for time series analysis in the time domain and in the frequency domain, with emphasis on how to implement them with base R and existing R packages such as Rnlme, MASS, tseries, fracdiff, mvtnorm, vars, and sspir. The authors explain the models by first giving a basic theoretical introduction followed by simulation of data from a particular model and fitting the latter to

the simulated data to recover the parameters. After that, they fit the class of models to either environmental, finance, economics, or physics data. There are many applications to climate change and oceanography. The R programs for the simulations are given even if there are R functions that would do the simulation. All examples given can be reproduced by the reader using the code provided in all chapters. Exercises at the end of each chapter are interesting, involving simulation, estimation, description, graphical analysis, and some theory. Data sets used throughout the book are available in a web site or come with base R or the R packages used. The book is a great guide to those wishing to get a basic introduction to modern time series modeling in practice, and in a short amount of time. (Journal of Statistical Software, January 2010, Vol. 32, Book Review 4)

“Later year undergraduates, beginning graduate students, and researchers and graduate students in any discipline needing to explore and analyse time series data. This very readable text covers a wide range of time series topics, always however within a theoretical framework that makes normality assumptions. The range of models that are discussed is unusually wide for an introductory text. The mathematical theory is remarkably complete. This text is recommended for its wide-ranging and insightful coverage of time series theory and practice. (John H. Maindonald, International Statistical Review, Vol. 78 (3), 2010)

“The authors present a textbook for students and applied researchers for time series analysis and linear regression analysis using R as the programming and command language. The book is written for students with knowledge of a first-year university statistics course in New-Zealand and Australia, but it also might serve as a useful tools for applied researchers interested in empirical procedures and applications which are not menu driven as it is the case for most econometric software packages nowadays. (Herbert S. Buscher, Zentralblatt MATH, Vol. 1179, 2010)

Yearly global mean temperature and ocean levels, daily share prices, and the signals transmitted back to Earth by the Voyager space craft are all examples of sequential observations over time known as time series. This book gives you a step-by-step introduction to analysing time series using the open source software R. Each time series model is motivated with practical applications, and is defined in mathematical notation. Once the model has been introduced it is used to generate synthetic data, using R code, and these generated data are then used to estimate its parameters. This sequence enhances understanding of both the time series model and the R function used to fit the model to data. Finally, the model is used to analyse observed data taken from a practical application. By using R, the whole procedure can be reproduced by the reader. All the data sets

used in the book are available on the website <http://staff.elena.aut.ac.nz/Paul-Cowpertwait/ts/>. The book is written for undergraduate students of mathematics, economics, business and finance, geography, engineering and related disciplines, and postgraduate students who may need to analyse time series as part of their taught programme or their research. Paul Cowpertwait is an associate professor in mathematical sciences (analytics) at Auckland University of Technology with a substantial research record in both the theory and applications of time series and stochastic models. Andrew Metcalfe is an associate professor in the School of Mathematical Sciences at the University of Adelaide, and an author of six statistics text books and numerous research papers. Both authors have extensive experience of teaching time series to students at all levels.

I like this book, but some of the exercises and code in the book is problematic such as exercise 4.6 and exercise 5.2. I had to fix the harmonic series code to get it to work, and there was still some code that still did not work. At times, it was difficult to follow. There were some enlightening exercises that helped me understand the content better.

This is a cracking book on applying R to time series analysis. The best parts of the book are all of the worked examples, the accompanying data sets and several different ways to calculate seasonality. The book is better than most on time series, because it does not neglect the de-trending process needed to get stationary residuals. If you use just the `lm()` command in R to do this before, then the real gem in this book is the advice to use the `gls()` command from the `nlme` library instead (to get the confidence intervals right). Overall, a very good book that is applied to R but has enough mathematical backing for the techniques presented. However, this is a book about applying time series analysis in R. If you seek a more algebraic treatment, then this is not the book I'm afraid, but it would be a great supplement!

This is anything except introductory in my point of view. There are lots of mathematical explanations and even proofing of theories about time series. Overall I liked the book because it offer you as much insight as you like to grasp, but I think the title is a little bit misleading.

I'm wondering if anyone know how to get answers to the even questions in the book? The website with data sets and answers to the odd questions had moved, but I would really like to get the answers to all the problems as I work through this book.

Great comprehensive introduction. Dont let the word introduction fool you. Sometimes it fools me into believing a book is going to be too basic and a bore. This book avoids that trap and covers a heap of content whilst striking a balance between technical and intro level understanding. I actually look forward to time alone so i can read it.

Differently from many other books in the "Use R!" series, this one is very didactic and comprehensive. It covers all important functions and applications in time series analysis, and it's good for both the graduate and undergraduate students or the casual researcher.

I loved reading this book. For one of my research paper on sales projections for Indian companies, I needed a book on time series analysis using R and this book served my purpose pretty well. The only problem with the book is that - the website of the book has changed. However, from the new website of the author, one can download all the data files and learn the subject.

Does a great job of explaining a complex topic. Good exercises to help build a better understanding of the material. Good explanations, and it's very useful it's done in R, as this package has great time series functions!

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