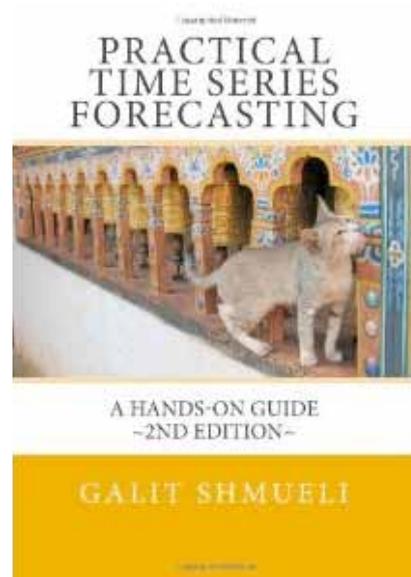


Practical Time Series Forecasting: A Hands-On Guide, 2nd edition By Galit Shmueli

Reviewed by Tom Willemain



“The book is a little gem.”

This neat little book aims to “introduce the reader to quantitative forecasting of time series in a practical, hands-on fashion.” For a certain kind of reader, it will doubtless succeed, and do so in a stylish way.

The book is meant to be a text for a “mini-semester” course for graduate or upper-level undergraduate students. I think it would be a stretch to believe there is enough technical material here to serve as the basis for a graduate course, but I could see it working well for undergraduates in industrial engineering or management who have had a prior statistics course (and therefore will indeed be able to “recall that a 95% prediction interval for normally distributed errors is...”).

There are end-of-chapter exercises of appropriate size and even setups for three real-world semester projects, so instructors could use the book as envisioned by the author. The book illustrates its points using XLMiner, an Excel add-in, and students can use the free demo version for almost all the exercises. Text datasets are available from the book’s website, which also provides a free time

series analysis “dashboard” application. The author notes that other software can be used in place of XLMiner and mentions Minitab, JMP, and Rob Hyndman’s *forecast* library in R.

While reading this book, I was delighted by its clarity. Having spent time recently correcting the technical prose of two otherwise good graduate students, I found the writing in this book to be a refreshing contrast, making technical concepts understandable.

Another virtue of this book is its selection of topics. The technical ones are reasonably standard (smoothing methods, regression using polynomial trends, and dummy variables) but also range a bit toward the more exotic (logistic regression, neural nets, a bit of ARIMA). More impressive is the inclusion of what might be called “meta-topics” relevant to forecasting: performance assessment, an overview of alternative technical approaches, and one on the forecasting process, from definition of goals to ways to gear reports differently for managerial and technical audiences. This is the kind of forecasting wisdom we find in Chris Chatfield’s book

(2004), though presented rather less tartly and with less mathematical exposition. I typically recommend Chatfield's introductory book for more technical readers interested in getting into time series; I would recommend Shmueli's book for a more general audience.

No review is complete without quibbles. Here are a few – too few to undo my very positive view of this impressive little book.

- The text makes a good case for “well formatted and easily readable” charts (p. 179). But I found many of the screen shots to be poorly printed and difficult to see. The book is otherwise so visually pleasing that these defects seem very out of character. It uses luxurious amounts of white space and whimsical marginal art to great effect, producing a very “light” feel that must surely help comprehension.
- The author claims (p. 115) that smoothing methods (e.g., moving averages, exponential smoothing) cannot be fully automated because “the user must specify smoothing constants.” Of course, this is not so, since there are several software packages that do this, and the text later contradicts itself on this point on page 127.
- The otherwise good discussion of autocorrelation misleads when it claims (p. 88) that negative lag-1 autocorrelation means that “high values are immediately followed by low values and vice versa.” Well, usually, but not always.



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When I finished reading this book, I realized immediately that there is another target audience outside the classroom. My company often conducts training sessions on the use of our software, and these include some general background on forecasting methods and processes. If we could excise the material on XLMiner, and even if we couldn't, this text would make a wonderful “leave behind” to help corporate forecasters-in-training understand the basics of time series forecasting. The book is so well written, well organized and well designed that it might even be read. We can certainly use it to help our new programmers understand the applications they are developing. And this book might even serve as guilty reading for a graduate student who wants to really “get” what's going on in Box, Jenkins and Reinsel (2008).

REFERENCES

Chatfield, C. (2004). *The Analysis of Time Series: An Introduction*, Chapman & Hall/CRC.

Box, G., Jenkins, G. & Reinsel, G. (2008). *Time Series Analysis: Forecasting and Control* (Wiley Series in Probability and Statistics).

The book is available in three editions: soft-cover, Kindle eBook, and a Chinese edition (published by Tsinghua University Press).



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