



Statistical Methods for Financial Engineering (Chapman & Hall/CRC Financial Mathematics)

By Bruno Remillard



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While many financial engineering books are available, the statistical aspects behind the implementation of stochastic models used in the field are often overlooked or restricted to a few well-known cases. **Statistical Methods for Financial Engineering** guides current and future practitioners on implementing the most useful stochastic models used in financial engineering.

After introducing properties of univariate and multivariate models for asset dynamics as well as estimation techniques, the book discusses limits of the Black-Scholes model, statistical tests to verify some of its assumptions, and the challenges of dynamic hedging in discrete time. It then covers the estimation of risk and performance measures, the foundations of spot interest rate modeling, Lévy processes and their financial applications, the properties and parameter estimation of GARCH models, and the importance of dependence models in hedge fund replication and other applications. It concludes with the topic of filtering and its financial applications.

This self-contained book offers a basic presentation of stochastic models and addresses issues related to their implementation in the financial industry. Each chapter introduces powerful and practical statistical tools necessary to implement the models. The author not only shows how to estimate parameters efficiently, but he also demonstrates, whenever possible, how to test the validity of the proposed models. Throughout the text, examples using MATLAB® illustrate the application of the techniques to solve real-world financial problems. MATLAB and R programs are available on the author's website.

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Editorial Review

Review

"... an interesting book with many features that are not easily found elsewhere. ... libraries will certainly want to acquire a copy. ... there are plenty of points at which even experts will pick up new ideas."

?J. Michael Steele, *Journal of the American Statistical Association*, September 2014, Vol. 109

"... a successful attempt to cover the main statistical tools and methods used for practical purposes in financial engineering. In contrast to those few existing books on the implementation of stochastic models in financial markets, this monograph covers a vast number of topics from mathematical finance ... can be used by practitioners as a reference book, but also it can serve as an excellent textbook for training quantitative analysts ..."

?*Mathematical Reviews*, September 2014

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