Modeling Financial Time Series with S-PLUS

This book provides an up-to-date series of advanced chapters on applied financial econometric techniques pertaining to the various fields of commodities finance, mathematics & stochastics, international macroeconomics and financial econometrics. Financial Mathematics, Volatility and Covariance Modelling: Volume 2 provides a key repository on the current state of knowledge, the latest debates and recent literature on financial mathematics, volatility and covariance modelling. The first section is devoted to mathematical finance, stochastic modelling and control optimization. Chapters explore the recent financial crisis, the increase of uncertainty and volatility, and propose an alternative approach to deal with these issues. The second section covers financial volatility and covariance modelling and explores proposals for dealing with recent developments in financial econometrics. This book will be useful to students and researchers in applied econometrics; academics and students seeking convenient access to an unfamiliar area. It will also be of great interest to established researchers seeking a single repository on the current state of knowledge, current debates and relevant literature.

Essentials of Time Series for Financial Applications

Presents an up-to-date treatment of the models and methodologies of financial econometrics by one of the world’s leading financial econometricians.
The Basics of Financial Econometrics

This book proposes new methods to build optimal portfolios and to analyze market liquidity and volatility under market microstructure effects, as well as new financial risk measures using parametric and non-parametric techniques. In particular, it investigates the market microstructure of foreign exchange and futures markets.

Econometrics of Financial High-Frequency Data

Essentials of Time Series for Financial Applications serves as an agile reference for upper level students and practitioners who desire a formal, easy-to-follow introduction to the most important time series methods applied in financial applications (pricing, asset management, quant strategies, and risk management). Real-life data and examples developed with EViews illustrate the links between the formal apparatus and the applications. The examples either directly exploit the tools that EViews makes available or use programs that by employing EViews implement specific topics or techniques. The book balances a formal framework with as few proofs as possible against many examples that support its central ideas. Boxes are used throughout to remind readers of technical aspects and definitions and to present examples in a compact fashion, with full details (workout files) available in an on-line appendix.

Financial Econometrics

This collection of original articles 8 years in the making shines a bright light on recent advances in financial econometrics. From a survey of mathematical and statistical tools for understanding nonlinear Markov processes to an exploration of the time-series evolution of the risk-return tradeoff for stock market investment, noted scholars Yacine Aït-Sahalia and Lars Peter Hansen benchmark the current state of knowledge while contributors build a framework for its growth. Whether in the presence of statistical uncertainty or the proven advantages and limitations of value at risk models, readers will discover that they can set few constraints on the value of this long-awaited volume. Presents a broad survey of current research from local characterizations of the Markov process dynamics to financial market trading activity Contributors include Nobel Laureate Robert Engle and leading econometricians Offers a clarity of method and explanation unavailable in other financial econometrics collections
The availability of financial data recorded on high-frequency level has inspired a research area which over the last decade emerged to a major area in econometrics and statistics. The growing popularity of high-frequency econometrics is driven by technological progress in trading systems and an increasing importance of intraday trading, liquidity risk, optimal order placement as well as high-frequency volatility. This book provides a state-of-the-art overview on the major approaches in high-frequency econometrics, including univariate and multivariate autoregressive conditional mean approaches for different types of high-frequency variables, intensity-based approaches for financial point processes and dynamic factor models. It discusses implementation details, provides insights into properties of high-frequency data as well as institutional settings and presents applications to volatility and liquidity estimation, order book modelling and market microstructure analysis.

Analyzing Financial and Economic Data with R

This book addresses both theoretical developments in and practical applications of econometric techniques to finance-related problems. It includes selected edited outcomes of the International Econometric Conference of Vietnam (ECONVN2018), held at Banking University, Ho Chi Minh City, Vietnam on January 15-16, 2018. Econometrics is a branch of economics that uses mathematical (especially statistical) methods to analyze economic systems, to forecast economic and financial dynamics, and to develop strategies for achieving desirable economic performance. An extremely important part of economics is finances: a financial crisis can bring the whole economy to a standstill and, vice versa, a smart financial policy can dramatically boost economic development. It is therefore crucial to be able to apply mathematical techniques of econometrics to financial problems. Such applications are a growing field, with many interesting results and an even larger number of challenges and open problems.

High-Frequency Financial Econometrics

Financial Econometrics Using Stata

Financial econometrics is a great success story in economics. Econometrics uses data and statistical inference methods, together with structural and descriptive modeling, to address rigorous economic problems. Its development within the world of finance is quite recent and has been paralleled by a fast expansion of financial markets and an increasing variety and complexity of financial products. This has fueled the demand for people with advanced econometrics skills. For professionals and advanced graduate students pursuing greater expertise in econometric modeling, this is a superb guide to the field's frontier. With the goal of providing information that is absolutely up-to-date--essential in today's rapidly evolving financial environment--Gourieroux and Jasiak focus on methods related to foregoing research and those modeling techniques that seem relevant to future advances. They present a balanced synthesis of financial theory and statistical methodology. Recognizing that any model is necessarily a simplified image of reality and that econometric methods must be adapted and applied on a case-by-case basis, the authors employ a wide variety of data sampled at frequencies ranging from intraday to monthly. These data comprise time series representing both the European and North American markets for stocks, bonds, and foreign currencies. Practitioners are encouraged to keep a critical eye and are armed with graphical diagnostics to eradicate misspecification errors. This authoritative, state-of-the-art reference text is ideal for upper-level graduate students, researchers, and professionals seeking to update their skills and
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This book explores the intuitive appeal of neural networks and the genetic algorithm in finance. It demonstrates how neural networks used in combination with evolutionary computation outperform classical econometric methods for accuracy in forecasting, classification and dimensionality reduction. McNelis utilizes a variety of examples, from forecasting automobile production and corporate bond spread, to inflation and deflation processes in Hong Kong and Japan, to credit card default in Germany to bank failures in Texas, to cap-floor volatilities in New York and Hong Kong. * Offers a balanced, critical review of the neural network methods and genetic algorithms used in finance * Includes numerous examples and applications * Numerical illustrations use MATLAB code and the book is accompanied by a website

Financial Mathematics, Volatility and Covariance Modelling

This book presents mathematical, programming and statistical tools used in the real world analysis and modeling of financial data. The tools are used to model asset returns, measure risk, and construct optimized portfolios using the open source R programming language and Microsoft Excel. The author explains how to build probability models for asset returns, to apply statistical techniques to evaluate if asset returns are normally distributed, to use Monte Carlo simulation and bootstrapping techniques to evaluate statistical models, and to use optimization methods to construct efficient portfolios.

Handbook of Financial Econometrics

Financial Econometrics Using Stata is an essential reference for graduate students, researchers, and practitioners who use Stata to perform intermediate or advanced methods. After discussing the characteristics of financial time series, the authors provide introductions to ARMA models, univariate GARCH models, multivariate GARCH models, and applications of these models to financial time series. The last two chapters cover risk management and contagion measures. After a rigorous but intuitive overview, the authors illustrate each method by interpreting easily replicable Stata examples.

Analysis of Financial Time Series

This book provides an essential toolkit for all students wishing to know more about the modelling and analysis of financial data. Applications of econometric techniques are becoming increasingly common in the world of finance and this second edition of an established text covers the following key themes:

- Unit roots, cointegration and other developments

Economic and Financial Modelling with EViews
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An accessible guide to the growing field of financial econometrics As finance and financial products have become more complex, financial econometrics has emerged as a fast-growing field and necessary foundation for anyone involved in quantitative finance. The techniques of financial econometrics facilitate the development and management of new financial instruments by providing models for pricing and risk assessment. In short, financial econometrics is an indispensable component to modern finance. The Basics of Financial Econometrics covers the commonly used techniques in the field without using unnecessary mathematical/statistical analysis. It focuses on foundational ideas and how they are applied. Topics covered include: regression models, factor analysis, volatility estimations, and time series techniques. Covers the basics of financial econometrics an important topic in quantitative finance Contains several chapters on topics typically not covered even in basic books on econometrics such as model selection, model risk, and mitigating model risk Geared towards both practitioners and finance students who need to understand this dynamic discipline, but may not have advanced mathematical training, this book is a valuable resource on a topic of growing importance.

Financial Econometric Modeling

The second edition of this authoritative textbook continues the tradition of providing clear and concise descriptions of the new and classic concepts in financial theory. The authors keep the theory accessible by requiring very little mathematical background. First edition published by Prentice-Hall in 2001- ISBN 0130174467. The second edition includes new structure emphasizing the distinction between the equilibrium and the arbitrage perspectives on valuation and pricing, as well as a new chapter on asset management for the long term investor. "This book does admirably what it sets out to do - provide a bridge between MBA-level finance texts and PhD-level texts. many books claim to require little prior mathematical training, but this one actually does so. This book may be a good one for Ph.D students outside finance who need some basic training in financial theory or for those looking for a more user-friendly introduction to advanced theory. The exercises are very good." --Ian Gow, Student, Graduate School of Business, Stanford University Completely updated edition of classic textbook that fills a gap between MBA level texts and PHD level texts Focuses on clear explanations of key concepts and requires limited mathematical prerequisites Updates includes new structure emphasizing the distinction between the equilibrium and the arbitrage perspectives on valuation and pricing, as well as a new chapter on asset management for the long term investor

Applied Econometrics with R

The book applies econometric models to real-world economic and financial data. It begins with an overview of the basic principles of econometrics, and develops these into modern methods for analysing and interpreting economic and financial data. The book provides an accessible introduction to econometric methods, including regression analysis, time series analysis, and panel data analysis. It also covers the use of R for econometric analysis, providing examples of how to use R for data analysis and model estimation. The book is designed for students and practitioners who want to learn econometric methods and how to apply them using R.

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A compact, master's-level textbook on financial econometrics, focusing on methodology and including real financial data illustrations throughout. The mathematical level is purposely kept moderate, allowing the power of the quantitative methods to be understood without too much technical detail.

Econometrics For Dummies
Essentials of Applied Econometrics prepares students for a world in which more data surround us every day and in which econometric tools are put to diverse uses. Written for students in economics and for professionals interested in continuing an education in econometrics, this succinct text not only teaches best practices and state-of-the-art techniques, but uses vivid examples and data obtained from a variety of real world sources. The book's emphasis on application uniquely prepares the reader for today's econometric work, which can include analyzing causal relationships or correlations in big data to obtain useful insights.

Neural Networks in Finance
This book investigates several competing forecasting models for interest rates, financial returns, and realized volatility, addresses the usefulness of nonlinear models for hedging purposes, and proposes new computational techniques to estimate financial processes.

The Elements of Financial Econometrics
Score your highest in econometrics? Easy. Econometrics can prove challenging for many students unfamiliar with the terms and concepts discussed in a typical econometrics course. Econometrics For Dummies eliminates that confusion with easy-to-understand explanations of important topics in the study of economics. Econometrics For Dummies breaks down this complex subject and provides you with an easy-to-follow course supplement to further refine your understanding of how econometrics works and how it can be applied in real-world situations. An excellent resource for anyone participating in a college or graduate level econometrics course Provides you with an easy-to-follow introduction to the techniques and applications of econometrics Helps you score high on exam day If you're seeking a degree in economics and looking for a plain-English guide to this often-intimidating course, Econometrics For Dummies has you covered.

An Introduction to Analysis of Financial Data with R
This book provides an up-to-date series of advanced chapters on applied financial econometric techniques pertaining the various fields of commodities finance, mathematics & stochastics, international macroeconomics and financial econometrics. International Financial Markets: Volume I provides a key repository on the current state of knowledge, the latest debates and recent literature on international financial markets. Against the background of the "financialization of commodities" since the 2008 sub-primes crisis, section one contains recent contributions on commodity and financial markets, pushing the frontiers of applied econometrics techniques. The second section is devoted to exchange rate and current account dynamics in an environment characterized by large global imbalances. Part three examines the latest research in the field of meta-analysis in economics and finance. This book will be useful to students and researchers in applied econometrics; academics and students seeking convenient access to an unfamiliar area. It will also be of great interest established researchers seeking a single repository on the current state of knowledge, current debates and relevant literature.
An Introduction to Analysis of Financial Data with R explores basic concepts of visualization of financial data. Through a fundamental balance between theory and applications, the book supplies readers with an accessible approach to financial econometric models and their applications to real-world empirical research. The author supplies a hands-on introduction to the analysis of financial data using the freely available R software package and case studies to illustrate actual implementations of the discussed methods. The book begins with the basics of financial data, discussing their summary statistics and related visualization methods. Subsequent chapters explore basic time series analysis and simple econometric models for business, finance, and economics as well as related topics including:

- Linear time series analysis, with coverage of exponential smoothing for forecasting and methods for model comparison
- Different approaches to calculating asset volatility and various volatility models
- High-frequency financial data and simple models for price changes, trading intensity, and realized volatility
- Quantitative methods for risk management, including value at risk and conditional value at risk
- Econometric and statistical methods for risk assessment based on extreme value theory and quantile regression

Throughout the book, the visual nature of the topic is showcased through graphical representations in R, and two detailed case studies demonstrate the relevance of statistics in finance. A related website features additional data sets and R scripts so readers can create their own simulations and test their comprehension of the presented techniques.

An Introduction to Analysis of Financial Data with R is an excellent book for introductory courses on time series and business statistics at the upper-undergraduate and graduate level. The book is also an excellent resource for researchers and practitioners in the fields of business, finance, and economics who would like to enhance their understanding of financial data and today's financial markets.

Essentials of Applied Econometrics

Terence Mills' best-selling graduate textbook provides detailed coverage of research techniques and findings relating to the empirical analysis of financial markets. In its previous editions it has become required reading for many graduate courses on the econometrics of financial modelling. This third edition, co-authored with Raphael Markellos, contains a wealth of material reflecting the developments of the last decade. Particular attention is paid to the wide range of nonlinear models that are used to analyse financial data observed at high frequencies and to the long memory characteristics found in financial time series. The central material on unit root processes and the modelling of trends and structural breaks has been substantially expanded into a chapter of its own. There is also an extended discussion of the treatment of volatility, accompanied by a new chapter on nonlinearity and its testing.

Financial Econometrics

The Handbook of Financial Econometrics and Statistics provides, in four volumes and over 100 chapters, a comprehensive overview of the primary methodologies in econometrics and statistics as applied to financial research. Including overviews of key concepts by the editors and in-depth contributions from leading scholars around the world, the Handbook is the definitive resource for both classic and cutting-edge theories, policies, and analytical techniques in the field. Volume 1 (Parts I and II) covers all of the essential theoretical and empirical approaches. Volumes 2, 3, and 4 feature contributed entries that showcase the application of financial econometrics and statistics to such topics as asset pricing, investment and portfolio research, option pricing, mutual funds, and financial accounting research. Throughout, the Handbook offers illustrative case examples and applications, worked equations, and extensive references, and includes both subject and author indices.
The past twenty years have seen an extraordinary growth in the use of quantitative methods in financial markets. Finance professionals now routinely use sophisticated statistical techniques in portfolio management, proprietary trading, risk management, financial consulting, and securities regulation. This graduate-level textbook is intended for PhD students, advanced MBA students, and industry professionals interested in the econometrics of financial modeling. The book covers the entire spectrum of empirical finance, including: the predictability of asset returns, tests of the Random Walk Hypothesis, the microstructure of securities markets, event analysis, the Capital Asset Pricing Model and the Arbitrage Pricing Theory, the term structure of interest rates, dynamic models of economic equilibrium, and nonlinear financial models such as ARCH, neural networks, statistical fractals, and chaos theory.

Each chapter develops statistical techniques within the context of a particular financial application. This exciting new text contains a unique and accessible combination of theory and practice, bringing state-of-the-art statistical techniques to the forefront of financial applications. Each chapter also includes a discussion of recent empirical evidence, for example, the rejection of the Random Walk Hypothesis, as well as problems designed to help readers incorporate what they have read into their own applications.

Written by leading market risk academic, Professor Carol Alexander, Practical Financial Econometrics forms part two of the Market Risk Analysis four volume set. It introduces the econometric techniques that are commonly applied to finance with a critical and selective exposition, emphasising the areas of econometrics, such as GARCH, cointegration and copulas that are required for resolving problems in market risk analysis. The book covers material for a one-semester graduate course in applied financial econometrics in a very pedagogical fashion as each time a concept is introduced an empirical example is given, and whenever possible this is illustrated with an Excel spreadsheet. All together, the Market Risk Analysis four volume set illustrates virtually every concept or formula with a practical, numerical example or a longer, empirical case study. Across all four volumes there are approximately 300 numerical and empirical examples, 400 graphs and figures and 30 case studies many of which are contained in interactive Excel spreadsheets available from the accompanying CD-ROM. Empirical examples and case studies specific to this volume include: Factor analysis with orthogonal regressions and using principal component factors; Estimation of symmetric and asymmetric, normal and Student t GARCH and E-GARCH parameters; Normal, Student t, Gumbel, Clayton, normal mixture copula densities, and simulations from these copulas with application to VaR and portfolio optimization; Principal component analysis of yield curves with applications to portfolio immunization and asset/liability management; Simulation of normal mixture and Markov switching GARCH returns; Cointegration based index tracking and pairs trading, with error correction and impulse response modelling; Markov switching regression models (Eviews code); GARCH term structure forecasting with volatility targeting; Non-linear quantile regressions with applications to hedging.
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Jan Koopman helped to incorporate the SsfPack functions into S-PLUS and to write the chapter on state space models. Alexander McNeil and Rene Carmona graciously provided background material and S-PLUS examples for the material in the chapter on modeling extreme values. A number of people were helpful in proofreading the book and testing the software. Particular thanks go to Andrew Bruce, Chuck Curry, Zhuanxin Ding, Ruud Koning, Steve McKinney, David Weitzel, Quan Wen and Bingcheng Yan.


Financial Econometrics

This practical guide in Eviews is aimed at practitioners and students in business, economics, econometrics, and finance. It uses a step-by-step approach to equip readers with a toolkit that enables them to make the most of this widely used econometric analysis software. Statistical and econometrics concepts are explained visually with examples, problems, and solutions. Developed by economists, the Eviews statistical software package is used most commonly for time-series oriented econometric analysis. It allows users to quickly develop statistical relations from data and then use those relations to forecast future values of the data. The package provides convenient ways to enter or upload data series, create new series from existing ones, display and print series, carry out statistical analyses of relationships among series, and manipulate results and output. This highly hands-on resource includes more than 200 illustrative graphs and tables and tutorials throughout. Abdulkader Aljandali is Senior Lecturer at Coventry University in London. He is currently leading the Stochastic Finance Module taught as part of the Global Financial Trading MSc. His previously published work includes Exchange Rate Volatility in Emerging Markers, Quantitative Analysis, Multivariate Methods & Forecasting with IBM SPSS Statistics and Multivariate Methods and Forecasting with IBM® SPSS® Statistics. Dr Aljandali is an established member of the British Accounting and Finance Association and the Higher Education Academy. Motasam Tatahi is a specialist in the areas of Macroeconomics, Financial Economics, and Financial Econometrics at the European Business School, Regents University London, where he serves as Principal Lecturer and Dissertation Coordinator for the MSc in Global Banking and Finance at The European Business School-London.

Intermediate Financial Theory

Financial econometrics has developed into a very fruitful and vibrant research area in the last two decades. The availability of good data promotes research in this area, specially aided by online data and high-frequency data. These two characteristics of financial data also create challenges for researchers that are different from classical macro-econometric and micro-econometric problems. This Special Issue is dedicated to research topics that are relevant for analyzing financial data. We have gathered six articles under this theme.

Market Risk Analysis, Practical Financial Econometrics
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... read the rest of the text...
An introduction to the field of financial econometrics, focusing on providing an introduction for undergraduate and postgraduate students whose math skills may not be at the most advanced level, but who need this material to pursue careers in research and the financial industry.

The Econometric Modelling of Financial Time Series book introduces the reader to the use of R and RStudio as a platform for analyzing financial and economic data. The book covers all necessary knowledge for using R, from its installation in your computer to the organization and development of scripts. For every chapter, the book presents practical and replicable examples of R code, providing context and facilitating the learning process. This is what you’ll learn from this book:

Using R and RStudio: In chapter 01 we will discuss the use of R as a programming platform designed to solve data-related problems in finance and economics. In chapter 02 we will explore basic commands and many functionalities of R and RStudio that will increase your productivity.

Importing financial and economic data: In chapters 04 and 05 we will learn to import data from local files, such as an Excel spreadsheet, or the internet, using specialized packages that can download financial and economic data such as stock prices, economic indices, the US yield curve, corporate financial statements, and many others.

Cleaning, structuring and analyzing the data with R: In chapters 06 and 07 we will concentrate our study on the ecosystem of basic and advanced classes of objects within R. We will learn to manipulate objects such as numeric vectors, dates and whole tables. In chapters 08 and 09 we’ll study to use the programming tools to solve data-related problems such as cleaning and structuring messy data. In chapter 11 we will learn applications of the most common econometric models used in finance and economics including linear regression, generalized linear model, Arima model and others.

Creating visual analysis of data: In chapter 10 we’ll learn to use functions from package ggplot2 to create clever visualizations of our datasets, including the most popular applications in finance and economics, time series and statistical plots.

Reporting your results: In chapter 12 we will see how to report our data analysis using specialized packages and the RMarkdown technology. Includes the topic of presenting and exporting tables, figure and models to a written report.

Writing better and faster code: In the last chapter of the book we discuss best programming practices with R. We will look at how to profile code and search for bottlenecks, and improving execution time with caching strategies using package memoise, C++ code with Rcpp and parallel computing with furrr. All the material used in the book, including code examples separated by chapters, slides and exercises is publicly available on the Internet and distributed with a R package called afedR. It includes data files and several functions that can make it easier to run the examples of the book. If you plan to write some code as you read the book, this package will greatly help your journey.

This book is recommended for researchers and students interested in learning how to use R. No prior knowledge of programming, finance or economics is required to take advantage of this book. After finishing, the reader will have enough knowledge to develop their own scripts autonomously, producing academic documents or data analysis for public and private institutions.

Econometrics for Financial Applications

This book provides a broad, mature, and systematic introduction to current financial econometric models and their applications to modeling and prediction of financial time series data. It utilizes real-world examples and real financial data throughout the book to apply the models and methods described. The author begins with basic characteristics of financial time series data before covering three main topics: Analysis and application of univariate financial time series: The return series of multiple assets: Bayesian inference in finance: methods. Key features of the new edition include additional coverage of modern day topics such as arbitrage, pair trading, realized volatility, and credit risk modeling; a smooth transition from S-Plus to R; and expanded empirical financial data sets. The overall objective of the book is to provide some knowledge of financial time series, introduce some statistical tools useful for analyzing these series and gain experience in financial applications of various econometric methods.
This book is intended for use in a rigorous introductory PhD level course in econometrics.

Introduction to the Mathematical and Statistical Foundations of Econometrics

This four-volume handbook covers important concepts and tools used in the fields of financial econometrics, mathematics, statistics, and machine learning. Econometric methods have been applied in asset pricing, corporate finance, international finance, options and futures, risk management, and in stress testing for financial institutions. This handbook discusses a variety of econometric methods, including single equation multiple regression, simultaneous equation regression, and panel data analysis, among others. It also covers statistical distributions, such as the binomial and log normal distributions, in light of their applications to portfolio theory and asset management in addition to their use in research regarding options and futures contracts.

In both theory and methodology, we need to rely upon mathematics, which includes linear algebra, geometry, differential equations, Stochastic differential equation (Ito calculus), optimization, constrained optimization, and others. These forms of mathematics have been used to derive capital market line, security market line (capital asset pricing model), option pricing model, portfolio analysis, and others.

In recent times, an increased importance has been given to computer technology in financial research. Different computer languages and programming techniques are important tools for empirical research in finance. Hence, simulation, machine learning, big data, and financial payments are explored in this handbook.

Led by Distinguished Professor Cheng Few Lee from Rutgers University, this multi-volume work integrates theoretical, methodological, and practical issues based on his years of academic and industry experience.