

Applied Econometric Time Series 3rd Edition

This book examines conventional time series in the context of stationary data prior to a discussion of cointegration, with a focus on multivariate models. The authors provide a detailed and extensive study of impulse responses and forecasting in the stationary and non-stationary context, considering small sample correction, volatility and the impact of different orders of integration. Models with expectations are considered along with alternate methods such as Singular Spectrum Analysis (SSA), the Kalman Filter and Structural Time Series, all in relation to cointegration. Using single equations methods to develop topics, and as examples of the notion of cointegration, Burke, Hunter, and Canepa provide direction and guidance to the now vast literature facing students and graduate economists.

Applied Econometric Time Series, 4th Edition demonstrates modern techniques for developing models capable of forecasting, interpreting, and testing hypotheses concerning economic data. In this text, Dr. Walter Enders commits to using a “learn-by-doing” approach to help readers master time-series analysis efficiently and effectively.

This book presents the principles and methods for the practical analysis and prediction of economic and financial time series. It covers decomposition methods, autocorrelation methods for univariate time series, volatility and duration modeling for financial time series, and multivariate time series methods, such as cointegration and recursive state space modeling. It also includes numerous practical examples to demonstrate the theory using real-world data, as well as exercises at the end of each chapter to aid understanding. This book serves as a reference text for researchers, students and practitioners interested in time series, and can also be used for university courses on econometrics or computational finance.

This monograph deals with spatially dependent nonstationary time series in a way accessible to both time series econometricians wanting to understand spatial econometrics, and spatial econometricians lacking a grounding in time series analysis. After charting key concepts in both time series and spatial econometrics, the book discusses how the spatial connectivity matrix can be estimated using spatial panel data instead of assuming it to be exogenously fixed. This is followed by a discussion of spatial nonstationarity in spatial cross-section data, and a full exposition of non-stationarity in both single and multi-equation contexts, including the estimation and simulation of spatial vector autoregression (VAR) models and spatial error correction (ECM) models. The book reviews the literature on panel unit root tests and panel cointegration tests for spatially independent data, and for data that are strongly spatially dependent. It provides for the first time critical values for panel unit root tests and panel cointegration tests when the spatial panel data are weakly or spatially dependent. The volume concludes with a discussion of incorporating strong and weak spatial dependence in

non-stationary panel data models. All discussions are accompanied by empirical testing based on a spatial panel data of house prices in Israel.

Analysis of Economic Time Series: A Synthesis integrates several topics in economic time-series analysis, including the formulation and estimation of distributed-lag models of dynamic economic behavior; the application of spectral analysis in the study of the behavior of economic time series; and unobserved-components models for economic time series and the closely related problem of seasonal adjustment. Comprised of 14 chapters, this volume begins with a historical background on the use of unobserved components in the analysis of economic time series, followed by an Introduction to the theory of stationary time series. Subsequent chapters focus on the spectral representation and its estimation; formulation of distributed-lag models; elements of the theory of prediction and extraction; and formulation of unobserved-components models and canonical forms. Seasonal adjustment techniques and multivariate mixed moving-average autoregressive time-series models are also considered. Finally, a time-series model of the U.S. cattle industry is presented. This monograph will be of value to mathematicians, economists, and those interested in economic theory, econometrics, and mathematical economics.

Modelling trends and cycles in economic time series has a long history, with the use of linear trends and moving averages forming the basic tool kit of economists until the 1970s. Several developments in econometrics then led to an overhaul of the techniques used to extract trends and cycles from time series. Terence Mills introduces these various approaches to allow students and researchers to appreciate the variety of techniques and the considerations that underpin their choice for modelling trends and cycles.

Written for those who need an introduction, *Applied Time Series Analysis* reviews applications of the popular econometric analysis technique across disciplines. Carefully balancing accessibility with rigor, it spans economics, finance, economic history, climatology, meteorology, and public health. Terence Mills provides a practical, step-by-step approach that emphasizes core theories and results without becoming bogged down by excessive technical details. Including univariate and multivariate techniques, *Applied Time Series Analysis* provides data sets and program files that support a broad range of multidisciplinary applications, distinguishing this book from others. Focuses on practical application of time series analysis, using step-by-step techniques and without excessive technical detail Supported by copious disciplinary examples, helping readers quickly adapt time series analysis to their area of study Covers both univariate and multivariate techniques in one volume Provides expert tips on, and helps mitigate common pitfalls of, powerful statistical software including EViews and R Written in jargon-free and clear English from a master educator with 30 years+ experience explaining time series to novices Accompanied by a microsite with disciplinary data sets and files explaining

how to build the calculations used in examples

This advanced text for a course on time series econometrics introduces modern time series analyses through the use of wide-ranging examples and applications. Providing a balance between macro- and microeconomic applications, the book covers recent work that has only been published in journals.

This open access book covers the use of data science, including advanced machine learning, big data analytics, Semantic Web technologies, natural language processing, social media analysis, time series analysis, among others, for applications in economics and finance. In addition, it shows some successful applications of advanced data science solutions used to extract new knowledge from data in order to improve economic forecasting models. The book starts with an introduction on the use of data science technologies in economics and finance and is followed by thirteen chapters showing success stories of the application of specific data science methodologies, touching on particular topics related to novel big data sources and technologies for economic analysis (e.g. social media and news); big data models leveraging on supervised/unsupervised (deep) machine learning; natural language processing to build economic and financial indicators; and forecasting and nowcasting of economic variables through time series analysis. This book is relevant to all stakeholders involved in digital and data-intensive research in economics and finance, helping them to understand the main opportunities and challenges, become familiar with the latest methodological findings, and learn how to use and evaluate the performances of novel tools and frameworks. It primarily targets data scientists and business analysts exploiting data science technologies, and it will also be a useful resource to research students in disciplines and courses related to these topics. Overall, readers will learn modern and effective data science solutions to create tangible innovations for economic and financial applications.

The second edition of a comprehensive state-of-the-art graduate level text on microeconomic methods, substantially revised and updated. The second edition of this acclaimed graduate text provides a unified treatment of two methods used in contemporary econometric research, cross section and data panel methods. By focusing on assumptions that can be given behavioral content, the book maintains an appropriate level of rigor while emphasizing intuitive thinking. The analysis covers both linear and nonlinear models, including models with dynamics and/or individual heterogeneity. In addition to general estimation frameworks (particular methods of moments and maximum likelihood), specific linear and nonlinear methods are covered in detail, including probit and logit models and their multivariate, Tobit models, models for count data, censored and missing data schemes, causal (or treatment) effects, and duration analysis. Econometric Analysis of Cross Section and Panel Data was the first graduate econometrics text to focus on microeconomic data structures, allowing assumptions to be separated into population and sampling assumptions. This second edition has

been substantially updated and revised. Improvements include a broader class of models for missing data problems; more detailed treatment of cluster problems, an important topic for empirical researchers; expanded discussion of "generalized instrumental variables" (GIV) estimation; new coverage (based on the author's own recent research) of inverse probability weighting; a more complete framework for estimating treatment effects with panel data, and a firmly established link between econometric approaches to nonlinear panel data and the "generalized estimating equation" literature popular in statistics and other fields. New attention is given to explaining when particular econometric methods can be applied; the goal is not only to tell readers what does work, but why certain "obvious" procedures do not. The numerous included exercises, both theoretical and computer-based, allow the reader to extend methods covered in the text and discover new insights.

Time series data analysis is increasingly important due to the massive production of such data through the internet of things, the digitalization of healthcare, and the rise of smart cities. As continuous monitoring and data collection become more common, the need for competent time series analysis with both statistical and machine learning techniques will increase. Covering innovations in time series data analysis and use cases from the real world, this practical guide will help you solve the most common data engineering and analysis challenges in time series, using both traditional statistical and modern machine learning techniques. Author Aileen Nielsen offers an accessible, well-rounded introduction to time series in both R and Python that will have data scientists, software engineers, and researchers up and running quickly. You'll get the guidance you need to confidently:

- Find and wrangle time series data
- Undertake exploratory time series data analysis
- Store temporal data
- Simulate time series data
- Generate and select features for a time series
- Measure error
- Forecast and classify time series with machine or deep learning
- Evaluate accuracy and performance

Coverage has been extended to include recent topics. The book again presents a unified treatment of economic theory, with the method of maximum likelihood playing a key role in both estimation and testing. Exercises are included and the book is suitable as a general text for final-year undergraduate and postgraduate students.

"Maximum likelihood estimation is a general method for estimating the parameters of econometric models from observed data. The principle of maximum likelihood plays a central role in the exposition of this book, since a number of estimators used in econometrics can be derived within this framework. Examples include ordinary least squares, generalized least squares and full-information maximum likelihood. In deriving the maximum likelihood estimator, a key concept is the joint probability density function (pdf) of the observed random variables, y_t . Maximum likelihood estimation requires that the following conditions are satisfied. (1) The form of the joint pdf of y_t is known. (2) The specification of the moments of the joint pdf are known. (3) The joint pdf can be evaluated for all values of the parameters, θ . Parts ONE and TWO of this

book deal with models in which all these conditions are satisfied. Part THREE investigates models in which these conditions are not satisfied and considers four important cases. First, if the distribution of y_t is misspecified, resulting in both conditions 1 and 2 being violated, estimation is by quasi-maximum likelihood (Chapter 9). Second, if condition 1 is not satisfied, a generalized method of moments estimator (Chapter 10) is required. Third, if condition 2 is not satisfied, estimation relies on nonparametric methods (Chapter 11). Fourth, if condition 3 is violated, simulation-based estimation methods are used (Chapter 12). 1.2 Motivating Examples To highlight the role of probability distributions in maximum likelihood estimation, this section emphasizes the link between observed sample data and 4 The Maximum Likelihood Principle the probability distribution from which they are drawn"-- publisher.

"Amstat News" asked three review editors to rate their top five favorite books in the September 2003 issue. "Applied Econometric Times Series" was among those chosen. Unique in that it covers modern time series analysis from the sole prerequisite of an introductory course in multiple regression analysis. Describes the theory of difference equations, demonstrating that they are the foundation of all time-series models with emphasis on the Box-Jenkins methodology. Considers many recent developments in time series analysis including unit root tests, ARCH models, cointegration/error-correction models, vector autoregressions and more. There are numerous examples to illustrate various techniques, many of which concern econometric models of transnational terrorism. The accompanying disk provides data for students to work with.

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.

'Applied Econometrics' takes an intuitive, hands-on approach to presenting modern econometrics. Wide-ranging yet compact, the book features extensive software integration and contains empirical applications throughout. It provides step-by-step guidelines for all econometric tests and methods of estimation, and also provides interpretations of the results. The second edition of this popular book features expanded topical coverage, more coverage of fundamental concepts for students new to the subject or requiring a 'refresher', integrated finance applications throughout, as well as

the addition of Stata to the software coverage (already featuring EViews and Microfit). New chapters include: ? Limited Dependent Variable Regression Models ? Identification in Standard and Cointegrated Systems ? Solving Models This is an ideal book for undergraduate and master's economics or finance students taking a first course in applied econometrics. A companion website for this book is available at www.palgrave.com/economics/asteriou2 which contains: ? data files for students ? PowerPoint slides for lecturers

The book provides a comprehensive overview of the latest econometric methods for studying the dynamics of macroeconomic and financial time series. It examines alternative methodological approaches and concepts, including quantile spectra and co-spectra, and explores topics such as non-linear and non-stationary behavior, stochastic volatility models, and the econometrics of commodity markets and globalization. Furthermore, it demonstrates the application of recent techniques in various fields: in the frequency domain, in the analysis of persistent dynamics, in the estimation of state space models and new classes of volatility models. The book is divided into two parts: The first part applies econometrics to the field of macroeconomics, discussing trend/cycle decomposition, growth analysis, monetary policy and international trade. The second part applies econometrics to a wide range of topics in financial economics, including price dynamics in equity, commodity and foreign exchange markets and portfolio analysis. The book is essential reading for scholars, students, and practitioners in government and financial institutions interested in applying recent econometric time series methods to financial and economic data.

Although the theme of the monograph is primarily related to "Applied Econometrics", there are several theoretical contributions that are associated with empirical examples, or directions in which the novel theoretical ideas might be applied. The monograph is associated with significant and novel contributions in theoretical and applied econometrics; economics; theoretical and applied financial econometrics; quantitative finance; risk; financial modeling; portfolio management; optimal hedging strategies; theoretical and applied statistics; applied time series analysis; forecasting; applied mathematics; energy economics; energy finance; tourism research; tourism finance; agricultural economics; informatics; data mining; bibliometrics; and international rankings of journals and academics.

This book is concerned with recent developments in time series and panel data techniques for the analysis of macroeconomic and financial data. It provides a rigorous, nevertheless user-friendly, account of the time series techniques dealing with univariate and multivariate time series models, as well as panel data models. It is distinct from other time series texts in the sense that it also covers panel data models and attempts at a more coherent integration of time series, multivariate analysis, and panel data models. It builds on the author's extensive research in the areas of time series and panel data analysis and covers a wide variety of topics in one volume. Different parts of the book can be used as teaching material for a variety of courses in econometrics. It can also be used as reference manual. It begins with an overview of basic econometric and statistical techniques, and provides an account of stochastic processes, univariate and multivariate time series, tests for unit roots, cointegration, impulse response analysis, autoregressive conditional heteroskedasticity models, simultaneous equation models, vector autoregressions, causality, forecasting, multivariate volatility models, panel data models, aggregation and global vector autoregressive models (GVAR). The techniques are illustrated using Microfit 5 (Pesaran and Pesaran, 2009, OUP) with applications to real output, inflation, interest rates, exchange rates, and stock prices.

The treatment offers a thorough review of developments in econometric analysis of seasonal time series.

This book is intended for a first year graduate course in econometrics. However, the first six chapters have no matrix algebra and can be

used in an advanced undergraduate class. This can be supplemented by some of the material in later chapters that do not require matrix algebra, like the first part of Chapter 11 on simultaneous equations and Chapter 14 on time-series analysis. This book teaches some of the basic econometric methods and the underlying assumptions behind them. Estimation, hypotheses testing and prediction are three recurrent themes in this book. Some uses of econometric methods include (i) empirical testing of economic theory, whether it is the permanent income consumption theory or purchasing power parity, (ii) forecasting, whether it is GNP or unemployment in the U.S. economy or future sales in the computer industry. (iii) Estimation of price elasticities of demand, or returns to scale in production. More importantly, econometric methods can be used to simulate the effect of policy changes like a tax increase on gasoline consumption, or a ban on advertising on cigarette consumption.

In this book, the author rejects the theorem-proof approach as much as possible, and emphasize the practical application of econometrics. They show with examples how to calculate and interpret the numerical results. This book begins with students estimating simple univariate models, in a step by step fashion, using the popular Stata software system. Students then test for stationarity, while replicating the actual results from hugely influential papers such as those by Granger and Newbold, and Nelson and Plosser. Readers will learn about structural breaks by replicating papers by Perron, and Zivot and Andrews. They then turn to models of conditional volatility, replicating papers by Bollerslev. Finally, students estimate multi-equation models such as vector autoregressions and vector error-correction mechanisms, replicating the results in influential papers by Sims and Granger. The book contains many worked-out examples, and many data-driven exercises. While intended primarily for graduate students and advanced undergraduates, practitioners will also find the book useful. This book traces the history of the concept of work from its earliest stages and shows that its further formalization leads to equilibrium principle and to the principle of virtual works, and so pointing the way ahead for future research and applications. The idea that something remains constant in a machine operation is very old and has been expressed by many mathematicians and philosophers such as, for instance, Aristotle. Thus, a concept of energy developed. Another important idea in machine operation is Archimedes' lever principle. In modern times the concept of work is analyzed in the context of applied mechanics mainly in Lazare Carnot mechanics and the mechanics of the new generation of polytechnical engineers like Navier, Coriolis and Poncelet. In this context the word "work" is finally adopted. These engineers are also responsible for the incorporation of the concept of work into the discipline of economics when they endeavoured to combine the study of the work of machines and men together.

Enders continues to provide business professionals with an accessible introduction to time-series analysis. He clearly shows them how to develop models capable of forecasting, interpreting, and testing hypotheses concerning economic data using the latest techniques. The third edition includes new discussions on parameter instability and structural breaks as well as out-of-sample forecasting methods. New developments in unit root test and cointegration tests are covered. Multivariate GARCH models are also presented. In addition, several statistical examples have been updated with real-world data to help business professionals understand the relevance of the material. Professionals are constantly searching for competitive solutions to help determine current and future economic tendencies. Econometrics uses statistical methods and real-world data to predict and establish specific trends within business and finance. This analytical method sustains limitless potential, but the necessary research for professionals to understand and implement this approach is lacking. Applied Econometric Analysis: Emerging Research and

Opportunities explores the theoretical and practical aspects of detailed econometric theories and applications within economics, political science, public policy, business, and finance. Featuring coverage on a broad range of topics such as cointegration, machine learning, and time series analysis, this book is ideally designed for economists, policymakers, financial analysts, marketers, researchers, academicians, and graduate students seeking research on the various techniques of econometric concepts.

Volume 1 covers statistical methods related to unit roots, trend breaks and their interplay. Testing for unit roots has been a topic of wide interest and the author was at the forefront of this research. The book covers important topics such as the Phillips-Perron unit root test and theoretical analyses about their properties, how this and other tests could be improved, and ingredients needed to achieve better tests and the proposal of a new class of tests. Also included are theoretical studies related to time series models with unit roots and the effect of span versus sampling interval on the power of the tests. Moreover, this book deals with the issue of trend breaks and their effect on unit root tests. This research agenda fostered by the author showed that trend breaks and unit roots can easily be confused. Hence, the need for new testing procedures, which are covered. Volume 2 is about statistical methods related to structural change in time series models. The approach adopted is off-line whereby one wants to test for structural change using a historical dataset and perform hypothesis testing. A distinctive feature is the allowance for multiple structural changes. The methods discussed have, and continue to be, applied in a variety of fields including economics, finance, life science, physics and climate change. The articles included address issues of estimation, testing and/or inference in a variety of models: short-memory regressors and errors, trends with integrated and/or stationary errors, autoregressions, cointegrated models, multivariate systems of equations, endogenous regressors, long-memory series, among others. Other issues covered include the problems of non-monotonic power and the pitfalls of adopting a local asymptotic framework. Empirical analyses are provided for the US real interest rate, the US GDP, the volatility of asset returns and climate change.

Economic Time Series: Modeling and Seasonality is a focused resource on analysis of economic time series as pertains to modeling and seasonality, presenting cutting-edge research that would otherwise be scattered throughout diverse peer-reviewed journals. This compilation of 21 chapters showcases the cross-fertilization between the fields of time series modeling and seasonal adjustment, as is reflected both in the contents of the chapters and in their authorship, with contributors coming from academia and government statistical agencies. For easier perusal and absorption, the contents have been grouped into seven topical sections: Section I deals with periodic modeling of time series, introducing, applying, and comparing various seasonally periodic models Section II examines the estimation of time series components when models for series are misspecified in some sense, and the broader implications this has for seasonal

adjustment and business cycle estimation Section III examines the quantification of error in X-11 seasonal adjustments, with comparisons to error in model-based seasonal adjustments Section IV discusses some practical problems that arise in seasonal adjustment: developing asymmetric trend-cycle filters, dealing with both temporal and contemporaneous benchmark constraints, detecting trading-day effects in monthly and quarterly time series, and using diagnostics in conjunction with model-based seasonal adjustment Section V explores outlier detection and the modeling of time series containing extreme values, developing new procedures and extending previous work Section VI examines some alternative models and inference procedures for analysis of seasonal economic time series Section VII deals with aspects of modeling, estimation, and forecasting for nonseasonal economic time series By presenting new methodological developments as well as pertinent empirical analyses and reviews of established methods, the book provides much that is stimulating and practically useful for the serious researcher and analyst of economic time series. An extended formal analysis of economic forecasting co-authored by one of the world's leading econometricians. This book provides instruction and examples of the core methods in time series econometrics, drawing from several main fields of the social sciences.

This book presents modern developments in time series econometrics that are applied to macroeconomic and financial time series. It contains the most important approaches to analyze time series which may be stationary or nonstationary. 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.

The last decade has brought dramatic changes in the way that researchers analyze economic and financial time series. This book synthesizes these recent advances and makes them accessible to first-year graduate students. James Hamilton provides the first adequate text-book treatments of important innovations such as vector autoregressions, generalized method of moments, the economic and statistical consequences of unit roots, time-varying variances, and nonlinear time series models. In addition, he presents basic tools for analyzing dynamic systems (including linear

representations, autocovariance generating functions, spectral analysis, and the Kalman filter) in a way that integrates economic theory with the practical difficulties of analyzing and interpreting real-world data. Time Series Analysis fills an important need for a textbook that integrates economic theory, econometrics, and new results. The book is intended to provide students and researchers with a self-contained survey of time series analysis. It starts from first principles and should be readily accessible to any beginning graduate student, while it is also intended to serve as a reference book for researchers.

Covering the essential elements of the subject of econometrics, the author also introduces and explains techniques that are now widely used in applied work, although rarely introduced in detail in non-specialist texts, such as integrated time series, cointegration, simulation analysis, Johansen's Approach to multivariate co-integration and ARCH. The author explains the central distinction between stationary and nonstationary time series, which is of crucial importance in many areas of analysis, especially in macroeconomics and financial economics.

Economic forecasting is a key ingredient of decision making both in the public and in the private sector. Because economic outcomes are the result of a vast, complex, dynamic and stochastic system, forecasting is very difficult and forecast errors are unavoidable. Because forecast precision and reliability can be enhanced by the use of proper econometric models and methods, this innovative book provides an overview of both theory and applications.

Undergraduate and graduate students learning basic and advanced forecasting techniques will be able to build from strong foundations, and researchers in public and private institutions will have access to the most recent tools and insights. Readers will gain from the frequent examples that enhance understanding of how to apply techniques, first by using stylized settings and then by real data applications--focusing on macroeconomic and financial topics. This is first and foremost a book aimed at applying time series methods to solve real-world forecasting problems. Applied Economic Forecasting using Time Series Methods starts with a brief review of basic regression analysis with a focus on specific regression topics relevant for forecasting, such as model specification errors, dynamic models and their predictive properties as well as forecast evaluation and combination. Several chapters cover univariate time series models, vector autoregressive models, cointegration and error correction models, and Bayesian methods for estimating vector autoregressive models. A collection of special topics chapters study Threshold and Smooth Transition Autoregressive (TAR and STAR) models, Markov switching regime models, state space models and the Kalman filter, mixed frequency data models, nowcasting, forecasting using large datasets and, finally, volatility models. There are plenty of practical applications in the book and both EViews and R code are available online.

Time series econometrics is a rapidly evolving field. Particularly, the cointegration revolution has had a substantial impact

on applied analysis. Hence, no textbook has managed to cover the full range of methods in current use and explain how to proceed in applied domains. This gap in the literature motivates the present volume. The methods are sketched out, reminding the reader of the ideas underlying them and giving sufficient background for empirical work. The treatment can also be used as a textbook for a course on applied time series econometrics. Topics include: unit root and cointegration analysis, structural vector autoregressions, conditional heteroskedasticity and nonlinear and nonparametric time series models. Crucial to empirical work is the software that is available for analysis. New methodology is typically only gradually incorporated into existing software packages. Therefore a flexible Java interface has been created, allowing readers to replicate the applications and conduct their own analyses.

R is a language and environment for data analysis and graphics. It may be considered an implementation of S, an award-winning language initially developed at Bell Laboratories since the late 1970s. The R project was initiated by Robert Gentleman and Ross Ihaka at the University of Auckland, New Zealand, in the early 1990s, and has been developed by an international team since mid-1997. Historically, econometricians have favored other computing environments, some of which have fallen by the wayside, and also a variety of packages with canned routines. We believe that R has great potential in econometrics, both for research and for teaching. There are at least three reasons for this: (1) R is mostly platform independent and runs on Microsoft Windows, the Mac family of operating systems, and various flavors of Unix/Linux, and also on some more exotic platforms. (2) R is free software that can be downloaded and installed at no cost from a family of mirror sites around the globe, the Comprehensive R Archive Network (CRAN); hence students can easily install it on their own machines. (3) R is open-source software, so that the full source code is available and can be inspected to understand what it really does, learn from it, and modify and extend it. We also like to think that platform independence and the open-source philosophy make R an ideal environment for reproducible econometric research. Introduction to Time Series Using Stata, Revised Edition, by Sean Beckett, is a practical guide to working with time-series data using Stata. In this book, Beckett introduces time-series techniques--from simple to complex--and explains how to implement them using Stata. The many worked examples, concise explanations that focus on intuition, and useful tips based on the author's experience make the book insightful for students, academic researchers, and practitioners in industry and government. Beckett is a financial industry veteran with decades of experience in academics, government, and private industry. He was also a developer of Stata in its infancy and has been a regular Stata user since its inception. He wrote many of the first time-series commands in Stata. With his abundant knowledge of Stata and extensive experience with real-world time-series applications, Beckett provides readers with unique insights and motivation throughout the book. For those new to Stata, the book begins with a mild yet fast-paced introduction to Stata, highlighting

all the features you need to know to get started using Stata for time-series analysis. Before diving into analysis of time series, Becketti includes a quick refresher on statistical foundations such as regression and hypothesis testing. The discussion of time-series analysis begins with techniques for smoothing time series. As the moving-average and Holt-Winters techniques are introduced, Becketti explains the concepts of trends, cyclicity, and seasonality and shows how they can be extracted from a series. The book then illustrates how to use these methods for forecasting. Although these techniques are sometimes neglected in other time-series books, they are easy to implement, can be applied quickly, often produce forecasts just as good as more complicated techniques, and, as Becketti emphasizes, have the distinct advantage of being easily explained to colleagues and policy makers without backgrounds in statistics. Next, the book focuses on single-equation time-series models. Becketti discusses regression analysis in the presence of autocorrelated disturbances as well as the ARIMA model and Box-Jenkins methodology. An entire chapter is devoted to applying these techniques to develop an ARIMA-based model of U.S. GDP; this will appeal to practitioners, in particular, because it goes step by step through a real-world example: here is my series, now how do I fit an ARIMA model to it? The discussion of single-equation models concludes with a self-contained summary of ARCH/GARCH modeling. In the final portion of the book, Becketti discusses multiple-equation models. He introduces VAR models and uses a simple model of the U.S. economy to illustrate all key concepts, including model specification, Granger causality, impulse-response analyses, and forecasting. Attention then turns to nonstationary time-series. Becketti masterfully navigates the reader through the often-confusing task of specifying a VEC model, using an example based on construction wages in Washington, DC, and surrounding states. Introduction to Time Series Using Stata, Revised Edition, by Sean Becketti, is a first-rate, example-based guide to time-series analysis and forecasting using Stata. This is a must-have resource for researchers and students learning to analyze time-series data and for anyone wanting to implement time-series methods in Stata. [ed.]

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