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System Priors for Econometric Time Series - Michal Andrlé 2016-11-17

The paper introduces “system priors”, their use in Bayesian analysis of econometric time series, and provides a simple and illustrative application. System priors were devised by Andrlé and Benes (2013) as a tool to incorporate prior knowledge into an economic model. Unlike priors about individual parameters, system priors offer a simple and efficient way of formulating well-defined and economically-meaningful priors about high-level model properties. The generality of system priors are illustrated using an AR(2) process with a prior that most of its dynamics comes from business-cycle frequencies.

[System Priors: Formulating Priors about DSGE Models' Properties](#) - Michal Andrlé 2013-12-19

This paper proposes a novel way of formulating priors for estimating economic models. System priors are priors about the model's features and behavior as a system, such as the sacrifice ratio or the maximum duration of response of inflation to a particular shock, for instance. System priors represent a very transparent and economically meaningful way of formulating priors about parameters, without the unintended consequences of independent priors about individual parameters. System priors may complement or also substitute for independent marginal priors. The new philosophy of formulating priors is motivated, explained and illustrated using a structural model for monetary policy.

Empirical Dynamic Asset Pricing - Kenneth J. Singleton 2009-12-13

Written by one of the leading experts in the field, this book focuses on the interplay between model specification, data collection, and econometric testing of dynamic asset pricing models. The first several chapters provide an in-depth treatment of the econometric methods used in analyzing financial time-series models. The remainder explores the goodness-of-fit of preference-based and no-arbitrage models of equity returns and the term structure of interest rates; equity and fixed-income derivatives prices; and the prices of defaultable securities. Singleton addresses the restrictions on the joint distributions of asset returns and other economic variables implied by dynamic asset pricing models, as well as the interplay between model formulation and the choice of econometric estimation strategy. For each pricing problem, he provides a comprehensive overview of the empirical evidence on goodness-of-fit, with tables and graphs that facilitate critical assessment of the current state of the relevant literatures. As an added feature, Singleton includes throughout the book interesting tidbits of new research. These range from empirical results (not reported elsewhere, or updated from Singleton's previous papers) to new observations about model specification and new econometric methods for testing models. Clear and comprehensive, the book will appeal to researchers at financial institutions as well as advanced students of economics and finance, mathematics, and science.

Structural Vector Autoregressive Analysis - Lutz Kilian 2017-11-23

Structural vector autoregressive (VAR) models are important tools for empirical work in macroeconomics, finance, and related fields. This book not only reviews the many alternative structural VAR approaches discussed in the literature, but also highlights their pros and cons in practice. It provides guidance to empirical researchers as to the most appropriate modeling choices, methods of estimating, and evaluating structural VAR models. The book traces the evolution of the structural VAR methodology and contrasts it with other common methodologies, including dynamic stochastic general equilibrium (DSGE) models. It is intended as a bridge between the often quite technical econometric literature on structural VAR modeling and the needs of empirical researchers. The focus is not on providing the most rigorous theoretical

arguments, but on enhancing the reader's understanding of the methods in question and their assumptions. Empirical examples are provided for illustration.

The Econometrics of DSGE Models - Jesús Fernández-Villaverde 2009

In this paper, I review the literature on the formulation and estimation of dynamic stochastic general equilibrium (DSGE) models with a special emphasis on Bayesian methods. First, I discuss the evolution of DSGE models over the last couple of decades. Second, I explain why the profession has decided to estimate these models using Bayesian methods. Third, I briefly introduce some of the techniques required to compute and estimate these models. Fourth, I illustrate the techniques under consideration by estimating a benchmark DSGE model with real and nominal rigidities. I conclude by offering some pointers for future research.

Monetary and Fiscal Policy through a DSGE Lens - Harold L. Cole 2020-02-24

In *Monetary and Fiscal Policy Through a DSGE Lens*, Harold L. Cole develops and extends versions of a classic quantitative model of economic growth to take on a wide range of topics in monetary and fiscal policy. Bridging the gap between current undergraduate and graduate texts in the field, this comprehensive book covers the basic elements of advanced macroeconomics and equips readers to understand the debate on key policy questions. By using the simple DSGE, or dynamic stochastic general equilibrium, framework to build a series of quantitative models, the book combines a gradual introduction to advanced analytic methods with computer programming and quantitative policy analysis. In a clear discussion of the sophisticated interaction between theory and data, Cole explains how to gauge how well a model captures key elements in the data and how to reverse engineer a model to data. The book covers costs of inflation, optimal monetary policy, the impact of labor and capital taxes, and optimal fiscal policy. It systematically discusses technical material including the new Keynesian liquidity shock models, standard analytic methods, such as Lagrangian methods, and computational methods using Matlab and Python. With a strong computational emphasis, the volume teaches how to program up and solve systems of non-linear equations and develop models to study the macroeconomy. Knowing how to deeply understand and analyze models and develop computational code to evaluate the implications of those models is essential for students of macroeconomics. This book connects the standard undergraduate material to the elaborate models of advanced graduate courses with systematic and logical coverage of the basics of advanced modern macroeconomics.

Anticipating Correlations - Robert Engle 2009-01-19

Financial markets respond to information virtually instantaneously. Each new piece of information influences the prices of assets and their correlations with each other, and as the system rapidly changes, so too do correlation forecasts. This fast-evolving environment presents econometricians with the challenge of forecasting dynamic correlations, which are essential inputs to risk measurement, portfolio allocation, derivative pricing, and many other critical financial activities. In *Anticipating Correlations*, Nobel Prize-winning economist Robert Engle introduces an important new method for estimating correlations for large systems of assets: Dynamic Conditional Correlation (DCC). Engle demonstrates the role of correlations in financial decision making, and addresses the economic underpinnings and theoretical properties of correlations and their relation to other measures of dependence. He compares DCC with other correlation

estimators such as historical correlation, exponential smoothing, and multivariate GARCH, and he presents a range of important applications of DCC. Engle presents the asymmetric model and illustrates it using a multicountry equity and bond return model. He introduces the new FACTOR DCC model that blends factor models with the DCC to produce a model with the best features of both, and illustrates it using an array of U.S. large-cap equities. Engle shows how overinvestment in collateralized debt obligations, or CDOs, lies at the heart of the subprime mortgage crisis--and how the correlation models in this book could have foreseen the risks. A technical chapter of econometric results also is included. Based on the Econometric and Tinbergen Institutes Lectures, *Anticipating Correlations* puts powerful new forecasting tools into the hands of researchers, financial analysts, risk managers, derivative quants, and graduate students.

Econometric Modeling - David F. Hendry 2012-06-21

Econometric Modeling provides a new and stimulating introduction to econometrics, focusing on modeling. The key issue confronting empirical economics is to establish sustainable relationships that are both supported by data and interpretable from economic theory. The unified likelihood-based approach of this book gives students the required statistical foundations of estimation and inference, and leads to a thorough understanding of econometric techniques. David Hendry and Bent Nielsen introduce modeling for a range of situations, including binary data sets, multiple regression, and cointegrated systems. In each setting, a statistical model is constructed to explain the observed variation in the data, with estimation and inference based on the likelihood function. Substantive issues are always addressed, showing how both statistical and economic assumptions can be tested and empirical results interpreted. Important empirical problems such as structural breaks, forecasting, and model selection are covered, and Monte Carlo simulation is explained and applied. Econometric Modeling is a self-contained introduction for advanced undergraduate or graduate students. Throughout, data illustrate and motivate the approach, and are available for computer-based teaching. Technical issues from probability theory and statistical theory are introduced only as needed. Nevertheless, the approach is rigorous, emphasizing the coherent formulation, estimation, and evaluation of econometric models relevant for empirical research.

Mastering 'Metrics - Joshua D. Angrist 2014-12-21

An accessible and fun guide to the essential tools of econometric research Applied econometrics, known to aficionados as 'metrics, is the original data science. 'Metrics encompasses the statistical methods economists use to untangle cause and effect in human affairs. Through accessible discussion and with a dose of kung fu-themed humor, *Mastering 'Metrics* presents the essential tools of econometric research and demonstrates why econometrics is exciting and useful. The five most valuable econometric methods, or what the authors call the Furious Five--random assignment, regression, instrumental variables, regression discontinuity designs, and differences in differences--are illustrated through well-crafted real-world examples (vetted for awesomeness by Kung Fu Panda's Jade Palace). Does health insurance make you healthier? Randomized experiments provide answers. Are expensive private colleges and selective public high schools better than more pedestrian institutions? Regression analysis and a regression discontinuity design reveal the surprising truth. When private banks teeter, and depositors take their money and run, should central banks step in to save them? Differences-in-differences analysis of a Depression-era banking crisis offers a response. Could arresting O. J. Simpson have saved his ex-wife's life? Instrumental variables methods instruct law enforcement authorities in how best to respond to domestic abuse. Wielding econometric tools with skill and confidence, *Mastering 'Metrics* uses data and statistics to illuminate the path from cause to effect. Shows why econometrics is important Explains econometric research through humorous and accessible discussion Outlines empirical methods central to modern econometric practice Works through interesting and relevant real-world examples

Estimating How the Macroeconomy Works - Ray C. FAIR 2009-06-30

Macroeconomics tries to describe and explain the economywide movement of prices, output, and unemployment. The field has been sharply divided among various schools, including Keynesian, monetarist, new classical, and others. It has also been split between theorists and empiricists. Ray Fair is a resolute empiricist, developing and refining methods for testing theories and models. The field cannot advance without the discipline of testing how well the models approximate the data. Using a multicountry econometric model, he examines several important questions, including what causes inflation, how monetary

authorities behave and what are their stabilization limits, how large is the wealth effect on aggregate consumption, whether European monetary policy has been too restrictive, and how large are the stabilization costs to Europe of adopting the euro. He finds, among other things, little evidence for the rational expectations hypothesis and for the so-called non-accelerating inflation rate of unemployment (NAIRU) hypothesis. He also shows that the U.S. economy in the last half of the 1990s was not a new age economy.

Inflation versus Price-Level Targeting - Lukas Heim 2014-11-20

Lukas Heim evaluates the performance of a price-level targeting rule compared to that of a standard inflation targeting rule. The comparison is based on a medium-scale DSGE model which has been estimated based on state-of-the-art Bayesian methods. The model for the Swiss economy is an expanded version of the framework proposed by Galí and Monacelli (2005) as well as Monacelli (2005). It is enriched with habit formation in consumption, price indexation, labor market imperfections, and several additional structural disturbances. The results show that - exactly as expected - the volatility of inflation is quite significantly lower under the price-level targeting regime, whereas the volatility of the output gap is markedly higher conditional on either productivity or preference shocks. Therefore, the introduction of a price-level targeting regime would likely produce an increase in the volatility of real economic activity conditional on both supply-side and demand-side shocks. Since inflation and output are targeted simultaneously, none of the two policies is strictly dominant.

[Bayesian Estimation of DSGE Models](#) - Edward P. Herbst 2015-12-29

Dynamic stochastic general equilibrium (DSGE) models have become one of the workhorses of modern macroeconomics and are extensively used for academic research as well as forecasting and policy analysis at central banks. This book introduces readers to state-of-the-art computational techniques used in the Bayesian analysis of DSGE models. The book covers Markov chain Monte Carlo techniques for linearized DSGE models, novel sequential Monte Carlo methods that can be used for parameter inference, and the estimation of nonlinear DSGE models based on particle filter approximations of the likelihood function. The theoretical foundations of the algorithms are discussed in depth, and detailed empirical applications and numerical illustrations are provided. The book also gives invaluable advice on how to tailor these algorithms to specific applications and assess the accuracy and reliability of the computations. *Bayesian Estimation of DSGE Models* is essential reading for graduate students, academic researchers, and practitioners at policy institutions.

Handbook of Research Methods and Applications in Empirical Macroeconomics - Nigar Hashimzade 2013-01-01

This comprehensive Handbook presents the current state of art in the theory and methodology of macroeconomic data analysis. It is intended as a reference for graduate students and researchers interested in exploring new methodologies, but can also be employed as a graduate text. The Handbook concentrates on the most important issues, models and techniques for research in macroeconomics, and highlights the core methodologies and their empirical application in an accessible manner. Each chapter is largely self-contained, whilst the comprehensive introduction provides an overview of the key statistical concepts and methods. All of the chapters include the essential references for each topic and provide a sound guide for further reading. Topics covered include unit roots, non-linearities and structural breaks, time aggregation, forecasting, the Kalman filter, generalised method of moments, maximum likelihood and Bayesian estimation, vector autoregressive, dynamic stochastic general equilibrium and dynamic panel models. Presenting the most important models and techniques for empirical research, this Handbook will appeal to students, researchers and academics working in empirical macro and econometrics.

Bayesian Econometrics - Mauro Bernardi 2020-12-28

Since the advent of Markov chain Monte Carlo (MCMC) methods in the early 1990s, Bayesian methods have been proposed for a large and growing number of applications. One of the main advantages of Bayesian inference is the ability to deal with many different sources of uncertainty, including data, models, parameters and parameter restriction uncertainties, in a unified and coherent framework. This book contributes to this literature by collecting a set of carefully evaluated contributions that are grouped amongst two topics in financial economics. The first three papers refer to macro-finance issues for real economy, including the elasticity of factor substitution (ES) in the Cobb-Douglas production function, the effects of government

public spending components, and quantitative easing, monetary policy and economics. The last three contributions focus on cryptocurrency and stock market predictability. All arguments are central ingredients in the current economic discussion and their importance has only been further emphasized by the COVID-19 crisis.

Probability and Statistics for Economists - Bruce Hansen 2022-06-28

A comprehensive and up-to-date introduction to the mathematics that all economics students need to know. Probability theory is the quantitative language used to handle uncertainty and is the foundation of modern statistics. Probability and Statistics for Economists provides graduate and PhD students with an essential introduction to mathematical probability and statistical theory, which are the basis of the methods used in econometrics. This incisive textbook teaches fundamental concepts, emphasizes modern, real-world applications, and gives students an intuitive understanding of the mathematics that every economist needs to know. Covers probability and statistics with mathematical rigor while emphasizing intuitive explanations that are accessible to economics students of all backgrounds. Discusses random variables, parametric and multivariate distributions, sampling, the law of large numbers, central limit theory, maximum likelihood estimation, numerical optimization, hypothesis testing, and more. Features hundreds of exercises that enable students to learn by doing. Includes an in-depth appendix summarizing important mathematical results as well as a wealth of real-world examples. Can serve as a core textbook for a first-semester PhD course in econometrics and as a companion book to Bruce E. Hansen's *Econometrics*. Also an invaluable reference for researchers and practitioners.

What is the Truth about DSGE Models? - David Meenagh 2017

This paper addresses the growing gulf between traditional macroeconometrics and the increasingly dominant preference among macroeconomists to use DSGE models and to estimate them using Bayesian estimation with strong priors but not to test them as they are likely to fail conventional statistical tests. This is in conflict with the high scientific ideals with which DSGE models were first invested in their aim of finding true models of the macroeconomy. As macro models are in reality only approximate representations of the economy, we argue that a pseudo-true inferential framework should be used to provide a measure of the robustness of DSGE models.

Palgrave Handbook of Econometrics - T. Mills 2009-06-25

Following these seminal Palgrave Handbook of Econometrics: Volume I, this second volume brings together the finest academics working in econometrics today and explores applied econometrics, containing contributions on subjects including growth/development econometrics and applied econometrics and computing.

Macroeconometrics and Time Series Analysis - Steven Durlauf 2016-04-30

Specially selected from The New Palgrave Dictionary of Economics 2nd edition, each article within this compendium covers the fundamental themes within the discipline and is written by a leading practitioner in the field. A handy reference tool.

Classics in Game Theory - Harold William Kuhn 1997-02-06

A subfield of mathematics and economics, the theory of games simulates situations in which individuals compete and cooperate with each other to hypothesize a conclusion. The contributions collected here are "classics" from the groundbreaking era of research launched in the late 1940s. These 18 essays constitute the core of game theory as it exists today. An invaluable tool for researchers and students of the sciences.

Complete and Incomplete Econometric Models - John Geweke 2010-02-08

Econometric models are widely used in the creation and evaluation of economic policy in the public and private sectors. But these models are useful only if they adequately account for the phenomena in question, and they can be quite misleading if they do not. In response, econometricians have developed tests and other checks for model adequacy. All of these methods, however, take as given the specification of the model to be tested. In this book, John Geweke addresses the critical earlier stage of model development, the point at which potential models are inherently incomplete. Summarizing and extending recent advances in Bayesian econometrics, Geweke shows how simple modern simulation methods can complement the creative process of model formulation. These methods, which are accessible to economics PhD students as well as to practicing applied econometricians, streamline the processes of model development and specification checking. Complete with illustrations from a wide variety of applications, this is an important

contribution to econometrics that will interest economists and PhD students alike.

Methods for Applied Macroeconomic Research - Fabio Canova 2011-09-19

The last twenty years have witnessed tremendous advances in the mathematical, statistical, and computational tools available to applied macroeconomists. This rapidly evolving field has redefined how researchers test models and validate theories. Yet until now there has been no textbook that unites the latest methods and bridges the divide between theoretical and applied work. Fabio Canova brings together dynamic equilibrium theory, data analysis, and advanced econometric and computational methods to provide the first comprehensive set of techniques for use by academic economists as well as professional macroeconomists in banking and finance, industry, and government. This graduate-level textbook is for readers knowledgeable in modern macroeconomic theory, econometrics, and computational programming using RATS, MATLAB, or Gauss. Inevitably a modern treatment of such a complex topic requires a quantitative perspective, a solid dynamic theory background, and the development of empirical and numerical methods--which is where Canova's book differs from typical graduate textbooks in macroeconomics and econometrics. Rather than list a series of estimators and their properties, Canova starts from a class of DSGE models, finds an approximate linear representation for the decision rules, and describes methods needed to estimate their parameters, examining their fit to the data. The book is complete with numerous examples and exercises. Today's economic analysts need a strong foundation in both theory and application. *Methods for Applied Macroeconomic Research* offers the essential tools for the next generation of macroeconomists.

Econometrics - Bruce Hansen 2022-06-28

The most authoritative and up-to-date core econometrics textbook available. *Econometrics* is the quantitative language of economic theory, analysis, and empirical work, and it has become a cornerstone of graduate economics programs. *Econometrics* provides graduate and PhD students with an essential introduction to this foundational subject in economics and serves as an invaluable reference for researchers and practitioners. This comprehensive textbook teaches fundamental concepts, emphasizes modern, real-world applications, and gives students an intuitive understanding of econometrics. Covers the full breadth of econometric theory and methods with mathematical rigor while emphasizing intuitive explanations that are accessible to students of all backgrounds. Draws on integrated, research-level datasets, provided on an accompanying website. Discusses linear econometrics, time series, panel data, nonparametric methods, nonlinear econometric models, and modern machine learning. Features hundreds of exercises that enable students to learn by doing. Includes in-depth appendices on matrix algebra and useful inequalities and a wealth of real-world examples. Can serve as a core textbook for a first-year PhD course in econometrics and as a follow-up to Bruce E. Hansen's *Probability and Statistics for Economists*.

Handbook of Macroeconomics - John B. Taylor 1999-12-13

Annotation Part 6: Financial Markets and the Macroeconomy. 19. Asset prices, consumption, and the business cycle (J.Y. Campbell). 20. Human behavior and the efficiency of the financial system (R.J. Shiller). 21. The financial accelerator in a quantitative business cycle framework (B. Bernanke, M. Gertler and S. Gilchrist). Part 7: Monetary and Fiscal Policy. 22. Political economics and macroeconomic policy (T. Persson, G. Tabellini). 23. Issues in the design of monetary policy rules (B.T. McCallum). 24. Inflation stabilization and BOP crises in developing countries (G.A. Calvo, C.A. Vegh). 25. Government debt (D.W. Elmendorf, N.G. Mankiw). 26. Optimal fiscal and monetary policy (V.V. Chari, P.J. Kehoe).

Understanding Dsge Models - Celso Jose Costa Junior 2016-08-31

Covers the essentials in understanding Dynamic Stochastic General Equilibrium (DSGE) models. It begins with a basic Real Business Cycle model and gradually adds: imperfect competition; frictions in prices and wages; habit formation; non-Ricardian agents; adjustment cost in investment; of not using maximum installed capacity; and Government.

DSGE Models in Macroeconomics - Nathan Balke 2012-11-29

This volume of *Advances in Econometrics* contains articles that examine key topics in the modeling and estimation of dynamic stochastic general equilibrium (DSGE) models. Because DSGE models combine micro- and macroeconomic theory with formal econometric modeling and inference, over the past decade they have become an established framework for analy

Supermodularity and Complementarity - Donald M. Topkis 2011-02-11

The economics literature is replete with examples of monotone comparative statics; that is, scenarios where optimal decisions or equilibria in a parameterized collection of models vary monotonically with the parameter. Most of these examples are manifestations of complementarity, with a common explicit or implicit theoretical basis in properties of a super-modular function on a lattice. Supermodular functions yield a characterization for complementarity and extend the notion of complementarity to a general setting that is a natural mathematical context for studying complementarity and monotone comparative statics. Concepts and results related to supermodularity and monotone comparative statics constitute a new and important formal step in the long line of economics literature on complementarity. This monograph links complementarity to powerful concepts and results involving supermodular functions on lattices and focuses on analyses and issues related to monotone comparative statics. Don Topkis, who is known for his seminal contributions to this area, here presents a self-contained and up-to-date view of this field, including many new results, to scholars interested in economic theory and its applications as well as to those in related disciplines. The emphasis is on methodology. The book systematically develops a comprehensive, integrated theory pertaining to supermodularity, complementarity, and monotone comparative statics. It then applies that theory in the analysis of many diverse economic models formulated as decision problems, noncooperative games, and cooperative games.

Structural Macroeconometrics - David N. DeJong 2011-10-03

The revised edition of the essential resource on macroeconometrics *Structural Macroeconometrics* provides a thorough overview and in-depth exploration of methodologies, models, and techniques used to analyze forces shaping national economies. In this thoroughly revised second edition, David DeJong and Chetan Dave emphasize time series econometrics and unite theoretical and empirical research, while taking into account important new advances in the field. The authors detail strategies for solving dynamic structural models and present the full range of methods for characterizing and evaluating empirical implications, including calibration exercises, method-of-moment procedures, and likelihood-based procedures, both classical and Bayesian. The authors look at recent strides that have been made to enhance numerical efficiency, consider the expanded applicability of dynamic factor models, and examine the use of alternative assumptions involving learning and rational inattention on the part of decision makers. The treatment of methodologies for obtaining nonlinear model representations has been expanded, and linear and nonlinear model representations are integrated throughout the text. The book offers a rich array of implementation algorithms, sample empirical applications, and supporting computer code. *Structural Macroeconometrics* is the ideal textbook for graduate students seeking an introduction to macroeconomics and econometrics, and for advanced students pursuing applied research in macroeconomics. The book's historical perspective, along with its broad presentation of alternative methodologies, makes it an indispensable resource for academics and professionals.

The Econometrics of Individual Risk - Christian Gourieroux 2011-07-24

The individual risks faced by banks, insurers, and marketers are less well understood than aggregate risks such as market-price changes. But the risks incurred or carried by individual people, companies, insurance policies, or credit agreements can be just as devastating as macroevents such as share-price fluctuations. A comprehensive introduction, *The Econometrics of Individual Risk* is the first book to provide a complete econometric methodology for quantifying and managing this underappreciated but important variety of risk. The book presents a course in the econometric theory of individual risk illustrated by empirical examples. And, unlike other texts, it is focused entirely on solving the actual individual risk problems businesses confront today. Christian Gourieroux and Joann Jasiak emphasize the microeconomic aspect of risk analysis by extensively discussing practical problems such as retail credit scoring, credit card transaction dynamics, and profit maximization in promotional mailing. They address regulatory issues in sections on computing the minimum capital reserve for coverage of potential losses, and on the credit-risk measure CreditVar. The book will interest graduate students in economics, business, finance, and actuarial studies, as well as actuaries and financial analysts.

Solving and Estimating Indeterminate DSGE Models - Mr. Roger Farmer 2013-10-01

We propose a method for solving and estimating linear rational expectations models that exhibit

indeterminacy and we provide step-by-step guidelines for implementing this method in the Matlab-based packages Dynare and Gensys. Our method redefines a subset of expectational errors as new fundamentals. This redefinition allows us to treat indeterminate models as determinate and to apply standard solution algorithms. We provide a selection method, based on Bayesian model comparison, to decide which errors to pick as fundamental and we present simulation results to show how our procedure works in practice.

The Oxford Handbook of Bayesian Econometrics - Herman van Dijk 2011-09-29

A broad coverage of the application of Bayesian econometrics in the major fields of economics and related disciplines, including macroeconomics, microeconomics, finance, and marketing.

High-Frequency Financial Econometrics - Yacine Aït-Sahalia 2014-07-21

A comprehensive introduction to the statistical and econometric methods for analyzing high-frequency financial data High-frequency trading is an algorithm-based computerized trading practice that allows firms to trade stocks in milliseconds. Over the last fifteen years, the use of statistical and econometric methods for analyzing high-frequency financial data has grown exponentially. This growth has been driven by the increasing availability of such data, the technological advancements that make high-frequency trading strategies possible, and the need of practitioners to analyze these data. This comprehensive book introduces readers to these emerging methods and tools of analysis. Yacine Aït-Sahalia and Jean Jacod cover the mathematical foundations of stochastic processes, describe the primary characteristics of high-frequency financial data, and present the asymptotic concepts that their analysis relies on. Aït-Sahalia and Jacod also deal with estimation of the volatility portion of the model, including methods that are robust to market microstructure noise, and address estimation and testing questions involving the jump part of the model. As they demonstrate, the practical importance and relevance of jumps in financial data are universally recognized, but only recently have econometric methods become available to rigorously analyze jump processes. Aït-Sahalia and Jacod approach high-frequency econometrics with a distinct focus on the financial side of matters while maintaining technical rigor, which makes this book invaluable to researchers and practitioners alike.

Bayesian Multivariate Time Series Methods for Empirical Macroeconomics - Gary Koop 2010

Bayesian Multivariate Time Series Methods for Empirical Macroeconomics provides a survey of the Bayesian methods used in modern empirical macroeconomics.

Computational Methods for the Study of Dynamic Economies - Ramon Marimon 1999-03-04

Macroeconomics increasingly uses stochastic dynamic general equilibrium models to understand theoretical and policy issues. Unless very strong assumptions are made, understanding the properties of particular models requires solving the model using a computer. This volume brings together leading contributors in the field who explain in detail how to implement the computational techniques needed to solve dynamic economics models. A broad spread of techniques are covered, and their application in a wide range of subjects discussed. The book provides the basics of a toolkit which researchers and graduate students can use to solve and analyse their own theoretical models.

The Econometric Analysis of Recurrent Events in Macroeconomics and Finance - Don Harding 2016-07-26

The global financial crisis highlighted the impact on macroeconomic outcomes of recurrent events like business and financial cycles, highs and lows in volatility, and crashes and recessions. At the most basic level, such recurrent events can be summarized using binary indicators showing if the event will occur or not. These indicators are constructed either directly from data or indirectly through models. Because they are constructed, they have different properties than those arising in microeconomics, and how one is to use them depends a lot on the method of construction. This book presents the econometric methods necessary for the successful modeling of recurrent events, providing valuable insights for policymakers, empirical researchers, and theorists. It explains why it is inherently difficult to forecast the onset of a recession in a way that provides useful guidance for active stabilization policy, with the consequence that policymakers should place more emphasis on making the economy robust to recessions. The book offers a range of econometric tools and techniques that researchers can use to measure recurrent events, summarize their properties, and evaluate how effectively economic and statistical models capture them. These methods also offer insights for developing models that are consistent with observed financial and real cycles. This book is

an essential resource for students, academics, and researchers at central banks and institutions such as the International Monetary Fund.

Game Theory for Applied Economists - Robert Gibbons 1992-07-13

This book introduces one of the most powerful tools of modern economics to a wide audience: those who will later construct or consume game-theoretic models. Robert Gibbons addresses scholars in applied fields within economics who want a serious and thorough discussion of game theory but who may have found other works overly abstract. Gibbons emphasizes the economic applications of the theory at least as much as the pure theory itself; formal arguments about abstract games play a minor role. The applications illustrate the process of model building--of translating an informal description of a multi-person decision situation into a formal game-theoretic problem to be analyzed. Also, the variety of applications shows that similar issues arise in different areas of economics, and that the same game-theoretic tools can be applied in each setting. In order to emphasize the broad potential scope of the theory, conventional applications from industrial organization have been largely replaced by applications from labor, macro, and other applied fields in economics. The book covers four classes of games, and four corresponding notions of equilibrium: static games of complete information and Nash equilibrium, dynamic games of complete information and subgame-perfect Nash equilibrium, static games of incomplete information and Bayesian Nash equilibrium, and dynamic games of incomplete information and perfect Bayesian equilibrium.

An Introduction to Mathematical Analysis for Economic Theory and Econometrics - Dean Corbae 2009-02-17

Providing an introduction to mathematical analysis as it applies to economic theory and econometrics, this book bridges the gap that has separated the teaching of basic mathematics for economics and the increasingly advanced mathematics demanded in economics research today. Dean Corbae, Maxwell B. Stinchcombe, and Juraj Zeman equip students with the knowledge of real and functional analysis and measure theory they need to read and do research in economic and econometric theory. Unlike other mathematics textbooks for economics, *An Introduction to Mathematical Analysis for Economic Theory and Econometrics* takes a unified approach to understanding basic and advanced spaces through the application of the Metric Completion Theorem. This is the concept by which, for example, the real numbers complete the rational numbers and measure spaces complete fields of measurable sets. Another of the book's unique features is its concentration on the mathematical foundations of econometrics. To illustrate difficult concepts, the authors use simple examples drawn from economic theory and econometrics. Accessible and rigorous, the book is self-contained, providing proofs of theorems and assuming only an undergraduate background in calculus and linear algebra. Begins with mathematical analysis and economic examples accessible to advanced undergraduates in order to build intuition for more complex analysis used by graduate students and researchers. Takes a unified approach to understanding basic and advanced spaces of numbers through application of the Metric Completion Theorem. Focuses on examples from econometrics to explain topics in measure theory.

The Oxford Handbook of Bayesian Econometrics - John Geweke 2011-09-29

Bayesian econometric methods have enjoyed an increase in popularity in recent years. Econometricians, empirical economists, and policymakers are increasingly making use of Bayesian methods. This handbook is a single source for researchers and policymakers wanting to learn about Bayesian methods in specialized fields, and for graduate students seeking to make the final step from textbook learning to the research frontier. It contains contributions by leading Bayesians on the latest developments in their specific fields of expertise. The volume provides broad coverage of the application of Bayesian econometrics in the major fields of economics and related disciplines, including macroeconomics, microeconomics, finance, and marketing. It reviews the state of the art in Bayesian econometric methodology, with chapters on posterior simulation and Markov chain Monte Carlo methods, Bayesian nonparametric techniques, and the specialized tools used by Bayesian time series econometricians such as state space models and particle filtering. It also includes chapters on Bayesian principles and methodology.

Construction and Bayesian Estimation of DSGE Models for the Euro Area - Ernest Pytlarczyk 2007
Dynamic Stochastic General Equilibrium (DSGE) models have become a standard tool in various fields of economics. This type of models has a superior theoretical foundation when compared to the Keynesian models which are traditionally used for policy analysis and forecasting. Although a lot has been done to improve the empirical properties of DSGE models, there is still a need for further research in this field. In this book, the author first considers a closed economy general equilibrium framework to empirically validate the alternative mechanisms for introducing nominal rigidities. As the comparison is done in the context of the Euro area aggregate data, the results provide guidance to researchers dealing with estimation of Euro area DSGE models in general. In the second part of the book, a coherent economic and statistical framework that approximates the structure of the EMU and explicitly accounts for the historical monetary regime change is presented. In such a framework the disaggregate information on the Euro area can be utilized, so that one can explain the area-wide aggregates, and also examine the cross-region linkages.

Frequentist Inference in Weakly Identified DSGE Models - Pablo A. Guerron-Quintana 2009

The authors show that in weakly identified models (1) the posterior mode will not be a consistent estimator of the true parameter vector, (2) the posterior distribution will not be Gaussian even asymptotically, and (3) Bayesian credible sets and frequentist confidence sets will not coincide asymptotically. This means that Bayesian DSGE estimation should not be interpreted merely as a convenient device for obtaining asymptotically valid point estimates and confidence sets from the posterior distribution. As an alternative, the authors develop a new class of frequentist confidence sets for structural DSGE model parameters that remains asymptotically valid regardless of the strength of the identification. The proposed set correctly reflects the uncertainty about the structural parameters even when the likelihood is flat, it protects the researcher from spurious inference, and it is asymptotically invariant to the prior in the case of weak identification.

The Oxford Handbook of Economic Forecasting - Michael P. Clements 2011-07-08

Greater data availability has been coupled with developments in statistical theory and economic theory to allow more elaborate and complicated models to be entertained. These include factor models, DSGE models, restricted vector autoregressions, and non-linear models.