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Solution And Estimation Methods For Dsge Models

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Solution And Estimation Methods For Dsge Models

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PRACTICAL SOFTWARE ESTIMATION

Springer Science & Business Media

This paper considers the estimation of a number of commonly used single-equation linear models, all of which have rationally expected future explanatory variables. Fully efficient and less efficient instrumental variable estimators are proposed in each case. The choice of estimation method is usually represented as a trade-off between efficiency on the one hand and robustness and computational convenience on the other. It is shown in this paper that there is a more fundamental issue which must influence the choice of estimator, namely the type of solution that the model possesses. The construction of an efficient estimation method depends on whether or not the model has a unique solution and often this will not be known a priori. Preliminary estimation by instrumental variable methods can be used

to resolve this question. Various tests are proposed in the paper. Whiteman's solution method is used to determine the types of solution that are possible for each model. It is shown how these solutions can be written as both backwards and forwards solutions and the parameter restrictions which are required to obtain unique solutions.
CRC Press
"A clearly written book that is a useful primer for a very complicated set of topics." --Capers Jones, Chief Scientist Emeritus, Software Productivity Research LLC Practical Software Estimation brings together today's most valuable tips, techniques, and best practices for accurately estimating software project efforts, costs, and schedules. Written by a leading expert in the field, it addresses the full spectrum of real-world challenges faced by those who must develop reliable estimates. M. A. Parthasarathy draws on the immense experience of Infosys, one of the world's largest and most respected providers of IT-enabled business solutions, to bring you the only book with detailed guidance on estimating insourced and outsourced software projects, as well as projects that blend both approaches. He demonstrates how to successfully utilize Function Point (FP) methods, the industry's leading estimation model. Then, using real case studies, he systematically

identifies pitfalls that can lead to inaccurate estimates--and offers proven solutions. Coverage includes How to estimate all types of software projects, including "fresh" development, reengineering, and maintenance How to incorporate the impact of core project elements on estimates: scope, environment, experience, and tools FP analysis from start to finish: data and transaction functions, general system characteristics, and more FP methods for any platform or business function Innovative re-estimation methods to track progress How to quote RFPs and prepare contracts: fixed price, time/material, and project execution lifecycle models Alternatives to FP: Delphi, COCOMO II, and COSMIC-FFP How to choose the right estimation tools Practical Software Estimation is the definitive reference for anyone who must estimate software projects accurately: project and IT managers, individual developers, system designers, architects, executives, consultants, and outsourcers alike. List of Figures List of Tables Foreword Preface Acknowledgments Chapter 1: Introduction Chapter 2: Role of Estimation in Software Projects Chapter 3: A Study of Function Point Analysis Chapter 4: Data Functions Chapter 5: Transactional Functions Chapter 6:

General System Characteristics Chapter 7: Size, Effort, and Scheduling of Projects Chapter 8: Estimation Flavors Chapter 9: A Sense of Where You Are Chapter 10: Tips, Tricks, and Traps Chapter 11: Insourcing versus Outsourcing Chapter 12: Key Factors in Software Contracts Chapter 13: Project Estimation and Costing Chapter 14: Other Estimation Methods Chapter 15: Estimation Tools Chapter 16: Estimation Case Study Appendix A: Reference Tables: Transaction Function Counts Appendix B: Reference Tables: Data Function Points Bibliography Index

Volumetric Properties of Electrolyte Solutions Academic Press This edition is one in a series of works by the authors on the investigation and systematic presentation of the physical and chemical properties of binary and multicomponent electrolyte solutions and on the pertinent estimation methods. The present edition offers extensive coverage of the volumetric properties of electrolyte solutions and includes new data on apparent molar volumes. The experimental density data for the most extensively used electrolytes cover a high temperature region and a range of pressures.

Point Estimation of Root Finding Methods James Beck The book describes how sparse optimization methods can be combined with

discretization techniques for differential-algebraic equations and used to solve optimal control and estimation problems. The interaction between optimization and integration is emphasized throughout the book. Handbook of Property Estimation Methods for Chemicals CRC Press A solution method and an estimation method for nonlinear rational expectations models are presented in this paper. The solution method can be used in forecasting and policy applications and can handle models with serial correlation and multiple viewpoint dates. When applied to linear models, the solution method yields the same results as those obtained from currently available methods that are designed specifically for linear models. It is, however, more flexible and general than these methods. For large nonlinear models the results in this paper indicate that the method works quite well. The estimation method is based on the maximum likelihood principal. It is, as far as we know, the only method available for obtaining maximum likelihood estimates for nonlinear rational expectations models. The method has the advantage of being applicable to a wide range of models, including, as a special case, linear ,models. The method can also handle different assumptions about the expectations of the exogenous variables,

something which is not true of currently available approaches to linear models.

Practical Methods for Optimal Control and Estimation Using Nonlinear Programming CRC Press

More than a decade ago, world-renowned control systems authority Frank L. Lewis introduced what would become a standard textbook on estimation, under the title Optimal Estimation, used in top universities throughout the world. The time has come for a new edition of this classic text, and Lewis enlisted the aid of two accomplished experts to bring the book completely up to date with the estimation methods driving today's high-performance systems.

A Classic Revisited Optimal and Robust Estimation: With an Introduction to Stochastic Control Theory, Second Edition reflects new developments in estimation theory and design techniques. As the title suggests, the major feature of this edition is the inclusion of robust methods. Three new chapters cover the robust Kalman filter, H-infinity filtering, and H-infinity filtering of discrete-time systems. Modern Tools for Tomorrow's Engineers This text overflows with examples that highlight practical applications of the theory and concepts. Design algorithms appear conveniently in tables, allowing students quick reference, easy

implementation into software, and intuitive comparisons for selecting the best algorithm for a given application. In addition, downloadable MATLAB® code allows students to gain hands-on experience with industry-standard software tools for a wide variety of applications. This cutting-edge and highly interactive text makes teaching, and learning, estimation methods easier and more modern than ever.

A Posteriori Error Estimation Techniques for Finite Element Methods

OUP Oxford
A focused presentation of how sparse optimization methods can be used to solve optimal control and estimation problems.

Solution and Maximum Likelihood Estimation of Dynamic Nonlinear Rational Expectations Models

Pearson Education
Solution and Estimation Methods for DSGE ModelsNonlinear EstimationCRC Press
Inverse Problem Theory and Methods for Model Parameter Estimation Harvard University Press
A solution method and an estimation method for nonlinear rational expectations models are presented in this paper. The solution method can be used in forecasting and policy applications and can handle models with serial correlation and multiple viewpoint dates. When applied to linear models, the

solution method yields the same results as those obtained from currently available methods that are designed specifically for linear models. It is, however, more flexible and general than these methods. For large nonlinear models the results in this paper indicate that the method works quite well. The estimation method is based on the maximum likelihood principal. It is, as far as we know, the only method available for obtaining maximum likelihood estimates for nonlinear rational expectations models. The method has the advantage of being applicable to a wide range of models, including, as a special case, linear , models. The method can also handle different assumptions about the expectations of the exogenous variables, something which is not true of currently available approaches to linear models. Factorization Methods for Discrete Sequential Estimation SIAM The thesis examines three methods for calculating the 100(1-alpha)% lower confidence limits for the reliability of a K-sized series system. Assuming that each component reliability has a Beta distribution, identical posterior parameters A and B are assigned for each component. (Author). **Numerical Solution of Ordinary Differential Equations** Routledge This book gives a practical, applications-oriented account of the latest techniques for

estimating and analyzing large, nonlinear macroeconomic models. Ray Fair demonstrates the application of these techniques in a detailed presentation of several actual models, including his United States model, his multicountry model, Sargent's classical macroeconomic model, autoregressive and vector autoregressive models, and a small (twelve equation) linear structural model. He devotes a good deal of attention to the difficult and often neglected problem of moving from theoretical to econometric models. In addition, he provides an extensive discussion of optimal control techniques and methods for estimating and analyzing rational expectations models. A computer program that handles all the techniques in the book is available from the author, making it possible to use the techniques with little additional programming. The book presents the logic of this program. A smaller program for personal microcomputers for analysis of Fair's United States model is available from Urban Systems Research & Engineering, Inc. Anyone wanting to learn how to use large macroeconomic models, including researchers, graduate students, economic forecasters, and people in business and government both in the United States and abroad, will find this an

essential guidebook.

Solution and Estimation Methods for DSGE Models Courier Corporation Although several excellent works exist that describe the effective elastic thickness (Te) of the lithosphere—its theory, significance and relevance to Earth sciences in general—none cover the details of the methods for its estimation. This book brings together the disparate knowledge required to estimate Te in one handy volume: signal processing, harmonic analysis, civil engineering, and foundational mathematics and physics, in addition to the relevant geophysics and, to a lesser extent, geology. Its two principal focus areas are spectral estimation, covering various approaches to estimating the admittance and coherence between gravity and topography using Slepian multitapers and fan wavelets; and algebraic and finite difference solutions of the plate bending partial differential equation in a variety of geological settings. This book would be suitable for postgraduate students beginning their research, up to faculty professors interested in diversifying their skills.

The Use of Known Classical System Reliability Estimation Methods to Approximate the Final Solution in Bayesian Methodology Springer Science & Business Media

This monograph is devoted to the construction of optimal estimates of values of linear functionals on solutions to Cauchy and two-point boundary value problems for systems of linear first-order ordinary differential equations, from indirect observations which are linear transformations of the same solutions perturbed by additive random noises. It is assumed that right-hand sides of equations and boundary data as well as statistical characteristics of random noises in observations are not known and belong to certain given sets in corresponding functional spaces. This leads to the necessity of introducing the minimax statement of an estimation problem when optimal estimates are defined as linear, with respect to observations, estimates for which the maximum of mean square error of estimation taken over the above-mentioned sets attains minimal value. Such estimates are called minimax or guaranteed estimates. It is established that these estimates are expressed explicitly via solutions to some uniquely solvable linear systems of ordinary differential equations of the special type. The authors apply these results for obtaining the optimal estimates of solutions from indirect noisy observations. Similar estimation problems for solutions of

boundary value problems for linear differential equations of order n with general boundary conditions are considered. The authors also elaborate guaranteed estimation methods under incomplete data of unknown right-hand sides of equations and boundary data and obtain representations for the corresponding guaranteed estimates. In all the cases estimation errors are determined.

The Estimation of Linear Models with Future Rational Expectations by Efficient and Instrumental Variable Methods Springer

This dissertation, "Robust Estimation Methods for Image Matching" by Chunlin, Feng, □□□, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Abstract of Thesis Entitled Robust Estimation Methods for Image Matching Submitted by FENG Chun Lin for the degree of Master of Philosophy at The University of Hong Kong in August 2004 This study proposes new image matching methods for matching feature points across a pair or triple of views through

robust recovery of epipolar geometry or trifocal geometry. The aim of this study was to enable 3D scenes to be automatically reconstructed using projective geometry, assuming corresponding points are matched robustly using the methods proposed in the thesis. Its findings have applications to 3D reconstruction, robust estimation and object recognition. Image matching, i.e. depicting the process of recovering feature correspondences, is a challenging problem in computer vision. The crux of this problem is that putative matches are often poorly or incorrectly extracted by intensity-based cross-correlation methods. Geometry-based methods, inspired by geometric relationships governing point correspondences, are therefore used to examine the correctness of correspondence of putative matches. However, retrieving geometric relationships can be difficult in the presence of a fair proportion of mismatches. For this reason, the fundamental matrix for epipolar geometry or trifocal tensor in the case of trifocal geometry may well be incorrectly estimated due to misclassification of matches and mismatches. In order to overcome this problem, two methods are proposed in this study for matching two-view and three-view images, both involving intensity-based and geometry-

base matching. Intensity-based matching forms putative matches based on image intensity, which involves corner detection and cross-correlation measurement. Geometry-based matching examines the correctness of correspondences of putative matches in a geometric perspective, thus enabling correct matches to be distinguished from mismatches. This method first determines the fundamental matrix or trifocal tensor from random samples, and then evaluates each solution through reprojection error measurement, parameter estimation, dataset classification and scoring, and finally yields the solution with the best score together with associated matches. The matching methods proposed in this study include: (a) incorporation of a maximum likelihood estimator for unknown parameters in the image error model, thus removing complexity arising from manual configuration of these parameters; (b) formulation of an effective cost function to score each solution by considering its consistency with estimated matches and the shape of its residual error distribution, thus enabling a fair measurement of solution error; and (c) determination and evaluation of solutions (the fundamental matrix for two views and the trifocal tensor

for three views) by means of the same measure viz. the geometric error. The novelty of the proposed methods mainly lies in the study in part (a) and (b), and in the integration of the characteristics (a)-(c) into a single algorithm. Extensive evaluations are performed for both synthetic and real image sequences to validate the proposed methods. This study also includes a novel investigation of random sampling strategy to determine the optimal size for random sampling in the fundamental matrix estimation, thereby improving the computational efficiency of linear estimators. DOI: 10.5353/th_b2975269

Initial Value Methods for Boundary Value Problems: Theory and Application of Invariant Imbedding Oxford University Press

This brief focuses on two main problems in the domain of optical flow and trajectory estimation: (i) The problem of finding convex optimization methods to apply sparsity to optical flow; and (ii) The problem of how to extend sparsity to improve trajectories in a computationally tractable way. Beginning with a review of optical flow fundamentals, it discusses the commonly used flow estimation strategies and the advantages or shortcomings of each. The brief also introduces the concepts associated with sparsity including dictionaries and low

rank matrices. Next, it provides context for optical flow and trajectory methods including algorithms, data sets, and performance measurement. The second half of the brief covers sparse regularization of total variation optical flow and robust low rank trajectories. The authors describe a new approach that uses partially-overlapping patches to accelerate the calculation and is implemented in a coarse-to-fine strategy. Experimental results show that combining total variation and a sparse constraint from a learned dictionary is more effective than employing total variation alone. The brief is targeted at researchers and practitioners in the fields of engineering and computer science. It caters particularly to new researchers looking for cutting edge topics in optical flow as well as veterans of optical flow wishing to learn of the latest advances in multi-frame methods. /div

Optimal and Robust Estimation Academic Press

The central focus of this book is the control of continuous-time/continuous-space nonlinear systems. Using new techniques that employ the max-plus algebra, the author addresses several classes of nonlinear control problems, including nonlinear optimal control problems and nonlinear robust/H-infinity control and estimation problems.

Several numerical techniques are employed, including a max-plus eigenvector approach and an approach that avoids the curse-of-dimensionality. The max-plus-based methods examined in this work belong to an entirely new class of numerical methods for the solution of nonlinear control problems and their associated Hamilton–Jacobi–Bellman (HJB) PDEs; these methods are not equivalent to either of the more commonly used finite element or characteristic approaches. Max-Plus Methods for Nonlinear Control and Estimation will be of interest to applied mathematicians, engineers, and graduate students interested in the control of nonlinear systems through the implementation of recently developed numerical methods.

Practical Methods for Optimal Control and Estimation Using Nonlinear Programming Springer Science & Business Media

The problem of solving nonlinear equations and systems of equations ranks among the most signi?cant in the theory and practice, not only of applied mathematicsbutalsoof manybranchesofengineeringsciences,physics,c- puter science, astronomy, ?nance, and so on. A glance at the bibliography and the list of great mathematicians who have worked on this topic points to a high

level of contemporary interest. Although the rapid development of digital computers led to the e?ective implementation of many numerical methods, in practical realization, it is necessary to solve various problems such as computational e?ciency based on the total central processor unit time, the construction of iterative methods which possess a fast convergence in the presence of multiplicity (or clusters) of a desired solution, the control of rounding errors, information about error bounds of obtained approximate solution, stating computationally veri?able initial conditions that ensure a safe convergence, etc. It is the solution of these challenging problems that was the principal motivation for the present study. In this book, we are mainly concerned with the statement and study of initial conditions that provide the guaranteed convergence of an iterative method for solving equations of the form f(z) = 0. The traditional approach to this problem is mainly based on asymptotic convergence analysis using some strong hypotheses on di?erentiability and derivative bounds in a rather wide domain.

Inverse Heat Transfer Begell House Publishers

While the prediction of observations is a forward problem, the use of actual observations to infer the properties of a

model is an inverse problem. Inverse problems are difficult because they may not have a unique solution. The description of uncertainties plays a central role in the theory, which is based on probability theory. This book proposes a general approach that is valid for linear as well as for nonlinear problems. The philosophy is essentially probabilistic and allows the reader to understand the basic difficulties appearing in the resolution of inverse problems. The book attempts to explain how a method of acquisition of information can be applied to actual real-world problems, and many of the arguments are heuristic. *Specification, Estimation, and Analysis of Macroeconometric Models* Springer Nature In this book, we study theoretical and practical aspects of computing methods for mathematical modelling of nonlinear systems. A number of computing techniques are considered, such as methods of operator approximation with any given accuracy; operator interpolation techniques including a non-Lagrange interpolation; methods of system representation subject to constraints associated with concepts of causality, memory and stationarity; methods of system representation with an accuracy that is the best within a given class of models;

methods of covariance matrix estimation; methods for low-rank matrix approximations; hybrid methods based on a combination of iterative procedures and best operator approximation; and methods for information compression and filtering under condition that a filter model should satisfy restrictions associated with causality and different types of memory. As a result, the book represents a blend of new methods in general computational analysis, and specific, but also generic, techniques for study of systems theory ant its particular branches, such as optimal filtering and information compression. - Best operator approximation, - Non-Lagrange interpolation, - Generic Karhunen-Loeve transform - Generalised low-rank matrix approximation - Optimal data compression - Optimal nonlinear filtering

A Posteriori Error Estimation Techniques for Finite Element Methods Springer

It was R. Frisch, who in his publications 'Correlation and Scatter Analysis in Statistical Variables' (1929) and 'Statistical Confluence Analysis by means of Complete Regression Systems' (1934) first pointed out the complications that arise if one applies regression analysis to variables among which several independent linear relations exist. Should these relationships be exact,

then there exist two closely related solutions for this problem, viz. 1. The estimation of 'stable' linear combinations of coefficients, the so-called estimable functions. 2. The dropping of the wen-known condition of unbiasedness of the estimators. This leads to minimum variance minimum bias estimators. This last solution is generalised in this book for the case of a model consisting of several equations. In econometrics however, the relations among variables are nearly always approximately linear so that one cannot apply one of the solutions mentioned above, because in that case the matrices used in these methods are, although ill-conditioned, always of full rank. Approximating these matrices by good-conditioned ones of the desired rank, it is possible to apply these estimation methods. In order to get an insight in the consequences of this approximation a simulation study has been carried out for a two-equation model. Two Stage Least Squares estimators and estimators found with the aid of the above mentioned estimation method have been compared. The results of this study seem to be favourable for this new method.

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