

by Arnold Zellner\*\*

It is indeed a great honor to be invited to present the John R. Commons Award Lecture. While I was never personally acquainted with John R. Commons, I did learn much about him and his work when I was a member of the Department of Economics, U. of Wisconsin, 1961-1966 from colleagues who had studied and worked with him. It appears that Commons emphasized a strong interaction between institutional analysis and theory and applications. I was told that he frequently challenged those who sought to change and hopefully improve institutions to draft laws embodying proposed changes and to predict the effects of these proposed, new laws. Thus in Commons' work, he emphasized a fruitful interaction between institutional analysis (descriptive and theoretical), application and prediction. In econometrics, I believe that a past and present basic issue is the relationship between economic and statistical theory and methods and applied analyses. In teaching and research, many, including myself have emphasized that a strong interaction between theory and application is most beneficial for the progress of economic science. In what follows, I shall discuss some past and present aspects of the interaction between theory and application and provide some suggestions that may make this interaction even more fruitful in the future.

The relationship between economic and statistical theory and applied, empirical analyses has been a basic issue in econometrics for many years. In the 1920s, demand analysts argued about whether to regress price on quantity or quantity on price in estimating theoretical demand relationships. This fruitful interaction between theory and application was an important factor leading to development of the concepts of parameter identification and specification of complete econometric models. In the 1930s, the valuable exchange between

Keynes and Tinbergen on the latter's applied econometric work brought to the fore some basic issues that are still very relevant.<sup>1</sup> Among these are the appropriateness of applying statistical methods to non-experimental economic time series data, possible incorrect specifications of relationships (left-out variables, e.g., psychological variables, incorrect lag structures, etc.) and possible inappropriate measurement of variables. Also, it was not clear to Keynes whether Tinbergen's models were just purely descriptive or could be employed for successful prediction and policy-making. In Tinbergen's cogent response, he emphasized the important role of his empirical results in appraising alternative theories of the business cycle and the merits of his approach in furthering business cycle analysis. In Keynes' rejoinder, he expressed continued skepticism but was willing to have Tinbergen continue his research, research that subsequently inspired the work of Klein and others on macro-econometric modeling of national economies. In the post World War II period, the empirical implementation of such macro-econometric models raised similar basic issues that are still with us today. Are these large, complex models dependable for forecasting and policy analysis?<sup>2</sup> Do they embody appropriate, sound economic theory?<sup>3</sup> Are they free of major specification errors? Have satisfactory statistical methods been utilized for estimation, testing, prediction and policy analysis?<sup>4</sup> Current econometric research is much concerned with these issues that have been with us for decades.

The 1946 book, *Measuring Business Cycles* by A. R. Burns and W. C. Mitchell raised some vital issues regarding the appropriate roles of measurement and theory in economic science. Some damned this work as being an example of "measurement without theory" while others, including myself, aware of the sin of "theory without measurement" were

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# Basic Issues In Econometrics

**Pierre Perron**



## Basic Issues In Econometrics:

Basic Issues in Econometrics Arnold Zellner, 1987      *A Guide to Econometrics* Peter Kennedy, 2008-02-19 This is the perfect and essential supplement for all econometrics classes from a rigorous first undergraduate course to a first master's to a PhD course Explains what is going on in textbooks full of proofs and formulas Offers intuition skepticism insights humor and practical advice dos and don'ts Contains new chapters that cover instrumental variables and computational considerations Includes additional information on GMM nonparametrics and an introduction to wavelets      Bayesian Econometrics Siddhartha Chib, William Griffiths, 2008-12-18 Illustrates the scope and diversity of modern applications reviews advances and highlights many desirable aspects of inference and computations This work presents an historical overview that describes key contributions to development and makes predictions for future directions      The Practice of Econometrics H. Neudecker, R.D.H. Heijmans, 2012-12-06 In the autumn of 1961 Jan Salomon Mars Cramer was appointed to the newly established chair of econometrics at the University of Amsterdam This volume is published to commemorate this event It is well known how much econometrics has developed over the period under consideration the 25 years that elapsed between 1961 and 1986 This is specifically true for the areas in which Cramer has been actively interested We mention the theory and measurement of consumer behaviour money and income regression correlation and forecasting In the present volume this development will be highlighted Sixteen contributions have been solicited from scholars all over the world who have belonged to the circle of academic friends of Cramer for a shorter or longer part of the period of 25 years The contributions fall broadly speaking into the four areas mentioned above Theory and measurement of consumer behaviour is represented by four papers whereas a fifth paper deals with a related area Richard Blundell and Costas Meghir devote a paper to the estimation of Engel curves They apply a discrete choice model to British individual data from the Family Expenditure Survey 1981 Their aim is to assess the impact of individual characteristics such as income demographic structure location wages and prices on commodity expenditure      **Developing Econometrics** Hengqing Tong, T. Krishna Kumar, Yangxin Huang, 2011-11-28 Statistical Theories and Methods with Applications to Economics and Business highlights recent advances in statistical theory and methods that benefit econometric practice It deals with exploratory data analysis a prerequisite to statistical modelling and part of data mining It provides recently developed computational tools useful for data mining analysing the reasons to do data mining and the best techniques to use in a given situation Provides a detailed description of computer algorithms Provides recently developed computational tools useful for data mining Highlights recent advances in statistical theory and methods that benefit econometric practice Features examples with real life data Accompanying software featuring DASC Data Analysis and Statistical Computing Essential reading for practitioners in any area of econometrics business analysts involved in economics and management and Graduate students and researchers in economics and statistics      *Econometrics Volume 1: Basic Theory And Topics For Cross-section Data* Pierre

Perron,2025-08-26 This book is intended for graduate instruction in subjects like econometrics economics environmental science social science and many other fields at the Masters or PhD levels It can be used as a textbook or as a reference guide It covers a wide range of topics related to tools used in cross sectional time series and panel data There are several aspects in which this book departs from traditional treatments The emphasis is on understanding the main issues concepts and methods in Econometrics how to implement them and interpret the results The mathematical aspects are kept to a minimum as the aim is to provide an intuitive understanding of how various parts fit together as opposed to a sophisticated mathematical treatment of the subject Many examples and discussions are provided Hence minimal mathematical pre requisites are needed Extensive references are also provided to dig deeper into the mathematical aspects of the theories Volume 1 deals with the main methods used for inference and hypothesis testing which are applicable to both time series and cross section data within a unified framework with special emphasis on how the conditions and methods differ for each It also includes a discussion of methods applicable only to a cross section of data usually a random sample and to panel data with a small time dimension Cases with a large number of predictors are also covered *Handbook of Econometrics* Zvi Griliches,Michael D. Intriligator,Robert Engle,Dan McFadden,1983 The Handbook is a definitive reference source and teaching aid for econometricians It examines models estimation theory data analysis and field applications in econometrics

*Econometrics of Information and Efficiency* Jati Sengupta,2013-03-14 Econometrics as an applied discipline attempts to use information in a most efficient manner yet the information theory and entropy approach developed by Shannon and others has not played much of a role in applied econometrics Econometrics of Information and Efficiency bridges the gap Broadly viewed information theory analyzes the uncertainty of a given set of data and its probabilistic characteristics Whereas the economic theory of information emphasizes the value of information to agents in a market the entropy theory stresses the various aspects of imprecision of data and their interactions with the subjective decision processes The tools of information theory such as the maximum entropy principle mutual information and the minimum discrepancy are useful in several areas of statistical inference e g Bayesian estimation expected maximum likelihood principle the fuzzy statistical regression This volume analyzes the applications of these tools of information theory to the most commonly used models in econometrics The outstanding features of Econometrics of Information and Efficiency are A critical survey of the uses of information theory in economics and econometrics An integration of applied information theory and economic efficiency analysis The development of a new economic hypothesis relating information theory to economic growth models New lines of research are emphasized **Handbook of Econometrics** James J. Heckman,Edward Leamer,2007-12-13 As conceived by the founders of the Econometric Society econometrics is a field that uses economic theory and statistical methods to address empirical problems in economics It is a tool for empirical discovery and policy analysis The chapters in this volume embody this vision and either implement it directly or provide the tools for doing so This vision is not shared by those who view

econometrics as a branch of statistics rather than as a distinct field of knowledge that designs methods of inference from data based on models of human choice behavior and social interactions All of the essays in this volume and its companion volume 6B offer guidance to the practitioner on how to apply the methods they discuss to interpret economic data The authors of the chapters are all leading scholars in the fields they survey and extend Part of the renowned Handbooks in Economics Series Updates and expands the existing Handbook of Econometrics volumes An invaluable reference written by some of the world's leading econometricians *Econometrics Volume 2: Topics For Time Series And Large Panel Data* Pierre Perron, 2025-08-28 This book is intended for graduate instruction in subjects like econometrics economics environmental science social science and many other fields at the Masters or PhD levels It can be used as a textbook or as a reference guide Several aspects in the book depart from traditional treatments The emphasis is on understanding the main issues concepts and methods in Econometrics how to implement them and how to interpret the results The mathematical aspects are kept to a minimum as the aim is to provide an intuitive understanding of how various parts fit together as opposed to a sophisticated mathematical treatment of the subject Many examples and discussions are provided Hence minimal mathematical pre requisites are needed Extensive references are also provided to dig deeper into the mathematical aspects of the theories The second volume deals with various estimation and inference methods applicable when using time series data or with panel data having a large time dimension The treatment covers both stationary and non stationary i.e. unit root data as well as long memory processes Also covered extensively are issues related to structural change including estimation and inference methods with stationary and or non stationary data related issues in the context of forecasting and methods to address the interplay between changes in trends and unit roots **A History of Econometrics** Duo Qin, 2013-07-25 Written from the Haavelmo Cowles Commission econometric perspective this book provides an account of the advances in the field of econometrics since the 1970s *The Formation of Econometrics* Duo Qin, 1997 Duo Qin has produced a study of a crucial period in the history of econometrics She analyses the development of the theory and methodology between 1930 and 1960 arguing in particular that the probability revolution of the 1940s was incomplete and resulted in later problems Statistics, Econometrics and Forecasting Arnold Zellner, 2004-02-19 Based on two lectures presented as part of The Stone Lectures in Economics series Arnold Zellner describes the structural econometric time series analysis SEMTSA approach to statistical and econometric modeling Developed by Zellner and Franz Palm the SEMTSA approach produces an understanding of the relationship of univariate and multivariate time series forecasting models and dynamic time series structural econometric models As scientists and decision makers in industry and government world wide adopt the Bayesian approach to scientific inference decision making and forecasting Zellner offers an in depth analysis and appreciation of this important paradigm shift Finally Zellner discusses the alternative approaches to model building and looks at how the use and development of the SEMTSA approach has led to the production of a Marshallian Macroeconomic

Model that will prove valuable to many Written by one of the foremost practitioners of econometrics this book will have wide academic and professional appeal **Introductory Econometrics** Hamid Seddighi,2013-03-01 This book constitutes the first serious attempt to explain the basics of econometrics and its applications in the clearest and simplest manner possible Recognising the fact that a good level of mathematics is no longer a necessary prerequisite for economics financial economics undergraduate and postgraduate programmes it introduces this key subdivision of economics to an audience who might otherwise have been deterred by its complex nature Econometric Analysis of Count Data Rainer Winkelmann,2013-11-11 Graduate students and researchers are provided with an up to date survey of statistical and econometric techniques for the analysis of count data with a focus on conditional distribution models Proper count data probability models allow for rich inferences both with respect to the stochastic count process that generated the data and with respect to predicting the distribution of outcomes The book starts with a presentation of the benchmark Poisson regression model Alternative models address unobserved heterogeneity state dependence selectivity endogeneity underreporting and clustered sampling Testing and estimation is discussed from frequentist and Bayesian perspectives Finally applications are reviewed in fields such as economics marketing sociology demography and health sciences The fourth edition contains several new sections for example on nonnested hurdle models quantile regression and on software Many other sections have been entirely rewritten and extended Business Cycles and Depressions David Glasner,2013-12-16 Experts define review and evaluate economic fluctuations Economic and business uncertainty dominate today s economic analyses This new Encyclopedia illuminates the subject by offering 323 original articles on every major aspect of business cycles fluctuations financial crises recessions and depressions The work of more than 200 experts including many of the leading researchers in the field the articles cover a broad range of subjects including capsule biographies of leading economists born before 1920 Individual entries explore banking panics the cobweb cycle consumer durables the depression of 1937 1938 Otto Eckstein Friedrich Engels experimental price bubbles forced savings lass Steagall Act Friedrich hagen qualitative indicators use of macro econometric models monetary neutrality Phillips Curve Paul Samuelson Say s law supply side recessions James Tokin trend and random wages Thorstein Veblen worker job turnover and more The Structural Econometric Time Series Analysis Approach Arnold Zellner,Franz C. Palm,2004-10-21 Bringing together a collection of previously published work this book provides a discussion of major considerations relating to the construction of econometric models that work well to explain economic phenomena predict future outcomes and be useful for policy making Analytical relations between dynamic econometric structural models and empirical time series MVARMA VAR transfer function and univariate ARIMA models are established with important application for model checking and model construction The theory and applications of these procedures to a variety of econometric modeling and forecasting problems as well as Bayesian and non Bayesian testing shrinkage estimation and forecasting procedures are also presented and

applied Finally attention is focused on the effects of disaggregation on forecasting precision and the Marshallian Macroeconomic Model that features demand supply and entry equations for major sectors of economies is analysed and described This volume will prove invaluable to professionals academics and students alike

**Spatial Econometrics: Methods and Models** L. Anselin, 2013-03-09 Spatial econometrics deals with spatial dependence and spatial heterogeneity critical aspects of the data used by regional scientists These characteristics may cause standard econometric techniques to become inappropriate In this book I combine several recent research results to construct a comprehensive approach to the incorporation of spatial effects in econometrics My primary focus is to demonstrate how these spatial effects can be considered as special cases of general frameworks in standard econometrics and to outline how they necessitate a separate set of methods and techniques encompassed within the field of spatial econometrics My viewpoint differs from that taken in the discussion of spatial autocorrelation in spatial statistics e g most recently by Cliff and Ord 1981 and Upton and Fingleton 1985 in that I am mostly concerned with the relevance of spatial effects on model specification estimation and other inference in what I call a model driven approach as opposed to a data driven approach in spatial statistics I attempt to combine a rigorous econometric perspective with a comprehensive treatment of methodological issues in spatial analysis

Handbook of Econometrics J.J. Heckman, Edward Leamer, 2001-11-22 The Handbook is a definitive reference source and teaching aid for econometricians It examines models estimation theory data analysis and field applications in econometrics Comprehensive surveys written by experts discuss recent developments at a level suitable for professional use by economists econometricians statisticians and in advanced graduate econometrics courses For more information on the Handbooks in Economics series please see our home page on <http://www.elsevier.nl/locate/hes>

Rescuing Econometrics Duo Qin, 2023-12-01 Haavelmo's 1944 monograph The Probability Approach in Econometrics is widely acclaimed as the manifesto of econometrics This book challenges Haavelmo's probability approach shows how its use is delivering defective and inefficient results and argues for a paradigm shift in econometrics towards a full embrace of machine learning with its attendant benefits Machine learning has only come into existence over recent decades whereas the universally accepted and current form of econometrics has developed over the past century A comparison between the two is however striking The practical achievements of machine learning significantly outshine those of econometrics confirming the presence of widespread inefficiencies in current econometric research The relative efficiency of machine learning is based on its theoretical foundation and particularly on the notion of Probably Approximately Correct PAC learning Careful examination reveals that PAC learning theory delivers the goals of applied economic modelling research far better than Haavelmo's probability approach Econometrics should therefore renounce its outdated foundation and rebuild itself upon PAC learning theory so as to unleash its pent up research potential The book is catered for applied economists econometricians economists specialising in the history and methodology of economics advanced students philosophers of social sciences

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