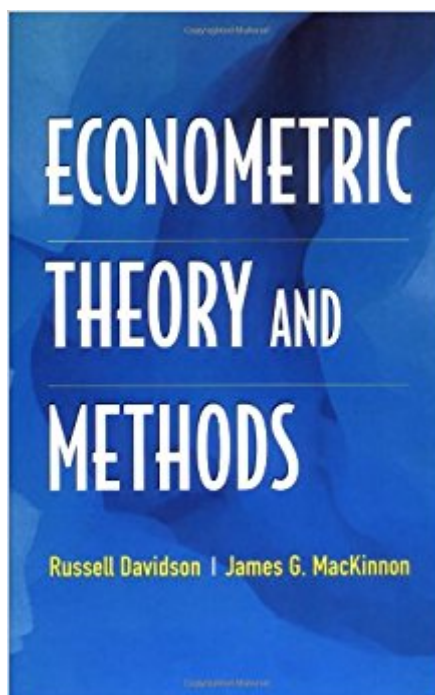


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# Econometric Theory And Methods



## Synopsis

Econometric Theory and Methods provides a unified treatment of modern econometric theory and practical econometric methods. The geometrical approach to least squares is emphasized, as is the method of moments, which is used to motivate a wide variety of estimators and tests. Simulation methods, including the bootstrap, are introduced early and used extensively. The book deals with a large number of modern topics. In addition to bootstrap and Monte Carlo tests, these include sandwich covariance matrix estimators, artificial regressions, estimating functions and the generalized method of moments, indirect inference, and kernel estimation. Every chapter incorporates numerous exercises, some theoretical, some empirical, and many involving simulation. Econometric Theory and Methods is designed for beginning graduate courses. The book is suitable for both one- and two-term courses at the Masters or Ph.D. level. It can also be used in a final-year undergraduate course for students with sufficient backgrounds in mathematics and statistics.

**FEATURES**

- **Unified Approach:** New concepts are linked to old ones whenever possible, and the notation is consistent both within and across chapters wherever possible.
- **Geometry of Ordinary Least Squares:** Introduced in Chapter 2, this method provides students with valuable intuition and allows them to avoid a substantial amount of tedious algebra later in the text.
- **Modern Concepts Introduced Early:** These include the bootstrap (Chapter 4), sandwich covariance matrices (Chapter 5), and artificial regressions (Chapter 6).
- **Inclusive Treatment of Mathematics:** Mathematical and statistical concepts are introduced as they are needed, rather than isolated in appendices or introductory chapters not linked to the main body of the text.
- **Advanced Topics:** Among these are models for duration and count data, estimating equations, the method of simulated moments, methods for unbalanced panel data, a variety of unit root and cointegration tests, conditional moment tests, nonnested hypothesis tests, kernel density regression, and kernel regression.
- **Chapter Exercises:** Every chapter offers numerous exercises, all of which have been answered by the authors in the Instructor's Manual. Particularly challenging exercises are starred and their solutions are available at the authors' website, providing a way for instructors and interested students to cover advanced material.

## Book Information

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## Customer Reviews

"This is a first class book, modern in conception and flawless in execution. The coverage is superb and it does things that many other books do not do or do not do adequately."--Richard E Quandt, Princeton University

"An excellent book that stands on its own in terms of approach."--Thanasis Stengos, University of Guelph, Canada

"This book teaches the core of econometric theory...with all of the fluency and didactic elegance that we have come to expect of its two authors....One of the book's outstanding features is its carefully constructed exercises which serve to reaffirm the concepts expounded in its chapters. The book has an elegant architecture, and it has been written with close attention to detail. In comparison, most other books that have a similar purpose look like mere agglomerations of econometric building materials. This is the best textbook of econometric theory to have emerged in a long while; and it deserves to find a place on the bookshelf of every instructor. It is bound to find favour with the students."--D.S.G. Pollock, University of London, UK

RUSSELL DAVIDSON holds the Canada Research Chair in Econometrics at McGill University in Montreal. He also teaches at GREQAM in Marseille and previously taught for many years at Queen's University. He has a Ph.D. in Physics from the University of Glasgow and a Ph.D. in Economics from the University of British Columbia. Professor Davidson is a Fellow of the Econometric Society and the author of many scientific papers. He is the coauthor of *Estimation and Inference in Econometrics* (OUP, 1993). JAMES G. MACKINNON is the Sir Edward Peacock Professor of Econometrics and Head of the Department at Queen's University in Kingston, Ontario, Canada, where he has taught since obtaining his Ph.D. from Princeton University in 1975. He is a Fellow of the Econometric Society and of the Royal Society of Canada and a past President of the Canadian Economics Association (2001-2002). Professor MacKinnon has written more than seventy journal articles and book chapters, and he is the coauthor of *Estimation and Inference in Econometrics* (OUP, 1993).

This is a very good introductory econometrics textbook for the mathematically well-prepared. No prior knowledge of econometrics or statistics is assumed, and the discussion of the necessary probability and statistics concepts is integrated into the main text rather than being relegated to appendices. All you need to read this book is a good knowledge of linear algebra and calculus. Once you finish it you will have a firm grasp of the basic methods and models used by econometricians and be prepared for going to more advanced sources like Wooldridge's *Econometric Analysis of Cross Section and Panel Data* or Hamilton's *Time Series Analysis*. Throughout the book Davidson and MacKinnon focus on developing intuition rather than on mechanical calculation. In particular, their geometric approach to ordinary least squares estimation is a must read. By focussing on the geometry and making clever use of the Frisch-Waugh-Lovell theorem, they make the properties of OLS very intuitive. Many of the standard results usually proved by opaque matrix algebra in other books, become clear and easy to prove in this framework. The book also has the advantage of covering topics like GMM estimation, the bootstrap and numerical methods that cannot be found in older textbooks. Yet, I have three quibbles with this book. The first, minor one, is that its treatment of time series methods is too short, and unlike the rest of the book tries to trade off depth for breadth. The second, bigger problem with this book is that it is entirely about econometric 'theory'. It teaches you how to find estimators and test statistics with good properties for particular models. But it does not train the student at all in the applied/methodological aspects of econometrics: given that I have a vague question about economic phenomena in mind, and given a bunch of data, how do I proceed? What questions can be meaningfully asked, how to choose between alternative models, how to present and interpret results, are questions that are given a short shrift in this book. Even data-based exercises are few and seem to have been reluctantly included. The third problem with this book is that it completely ignores the Bayesian approach to econometrics. Though this is in line with the general frequentist dominance of the econometrics profession, I feel that without at least an introduction to the Bayesian approach, the training of an econometrician will remain one-sided. The first two shortcomings of this book can be addressed by complementing it with Hayashi's *Econometrics*. Many interesting papers on methodology can be found in the book *Modelling Economic Series* edited by Granger.

I took the econometrics class from Davidson at McGill University that used this book, and it was not the best learning experience. This book is a good, rigorous "reference" text, with good definitions,

for someone with a really solid knowledge of the subject, who wants an in-depth reference on matrix-based approach to econometrics. Or you just need a teacher who explains all the concepts and derivations in great detail and provides examples and solutions (which Davidson did not do in class or in this textbook). The text itself does not contain explanations of the material, so unless this is your 2nd or 3rd graduate-level econometrics class, expect to need several more accessible backup/background texts/teachers.

Most thorough Econometrics book I've come across -- very linear-algebra heavy.

Great book

good

Compared to Hayashi, Davidson and Mackinnon's book is too "prose-like" and this style in my opinion isn't pedagogically suited for a first serious look into econometrics beyond the undergrad level. A model's assumptions and relevant properties are scattered throughout a chapter, buried in paragraphs, which can be annoying or even confusing when you need to reference back. Hayashi, on the other hand, presents models with clear listed assumptions, propositions, relevant derivations. DM's book is in my opinion extremely pedagogically inferior in this sense. However, there're still things you may take away from this book. For example, they present the classical regression model in the framework of matrix project, subspaces, etc., which is not usually treated this way in other texts. This approach makes many tedious matrix manipulation easier. In my opinion, if you are looking for your first metrics book beyond the undergrad level, definitely go for Hayashi first. This is simply the BEST book in terms of learning. For some more depth and alternative perspective, then consider this one.

Definitely the best and clearest book so far on this subject!! Written by a real top expert in this field (I took his course, the best eco. course I have taken). Much better than Green's book. If you are a serious graduate student in economics and management, especially those of you who are pursuing a PhD instead of only taking a course, it is the best for you. In-depth! Also frankly, it is not for a vaint brain and a guy with weak background. Only with this book and Johnston & Dinardo's, read and enjoy, then you will understand econometrics absolute confidently. Don't waste your money on other books!

Of several graduate econometric textbooks I've read so far, this is the best. Compared to Greene (2003), its explanations are much clearer and its mathematical results are adequately derived. Compared to Johnston & Dinardo (1997), its coverage is more complete. Compared to Hayashi (2000), its discussion of IV method is more explicit. To be fair, however, Hayashi is also extremely well-written.

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