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Microeconometrics using Stata
Stata Press
640 pages
Forthcoming Fall 2008

Preface

This book explains how an econometrics computer package, Stata, can be used to perform regression analysis of cross-section and panel data. The term microeconometrics is used in the book title because the applications are to economics-related data, and because the coverage includes methods such as instrumental variables regression that are emphasized more in economics than in some other areas of applied statistics. However, many issues, models and methodologies are also relevant to other social sciences.

The main audience is graduate students and researchers. For them this book can be used as an adjunct to our own *Microeconometrics: Methods and Applications* (Cameron and Trivedi (2005)) as well as other graduate-level texts such as Greene (2008), and Wooldridge (2002). By comparison to these books we present little theory and instead emphasize practical aspects of implementation using Stata. More advanced topics we cover include quantile regression, weak instruments, nonlinear optimization, bootstrap methods, nonlinear panel data methods, and Stata's matrix programming language Mata.

At the same time the book provides introductions to topics such as ordinary least squares regression, instrumental variables estimation and logit and probit models so that it is suitable for use in an undergraduate econometrics class, as a complement of an appropriate undergraduate-level text. The following table suggests sections of the book for an introductory class, with the caveat that in places formulae are provided using matrix algebra.

Stata basics	Chapter 1.1-1.4
Data management	Chapter 2.1-2.4, 2.6
OLS	Chapter 3.1-3.6
Simulation	Chapter 4.6-4.7
GLS (heteroskedasticity)	Chapter 5.3
Instrumental variables	Chapter 6.2-6.3
Linear panel data	Chapter 8
Logit and probit models	Chapter 14.1-14.4
Tobit model	Chapter 16.1-16.3

While we provide considerable detail on Stata, the treatment is by no means complete. In particular we introduce various Stata commands, but avoid detailed listing and description of commands as they are already well-documented in the Stata manuals and on-line help. Typically, we provide a pointer and a brief discussion, and often an example.

As much as possible we provide template code that can be adapted to other problems. It should be borne in mind that in order to shorten output for

this book our examples use many fewer regressors than necessary for serious research. Our code often suppresses intermediate output that is important in actual research, due to extensive use of command `quietly` and options `nolog`, `nodots` and `noheader`. And we minimize the use of graphs compared to typical use in exploratory data analysis.

We have used the very latest version of Stata 10, including Stata updates. The data sets and the programs in this book will be available on a web-site affiliated to Stata with email links. Any corrections will also be documented at that site.

We have learnt a lot of econometrics, in addition to Stata, during this project. Indeed we feel very strongly that a very effective learning tool for econometrics is hands-on learning by opening a Stata dataset and seeing the effect of using different methods and variations on the methods, such as using robust standard errors rather than default standard errors. This method is beneficial at all levels of ability in econometrics. Indeed an efficient way of familiarizing oneself with Stata's leading features might be to execute the commands in a relevant chapter on the user's own data set.

We have benefitted greatly from input and encouragement at many stages from David Drukker. Juan Du, Qian Li, and Abhijit Ramalingam carefully read many of the book chapters and provided very helpful comments. Discussions with John Daniels, Oscar Jorda, Guido Kuersteiner and Doug Miller were helpful. We thank Scott Parris for his guidance of our 2005 book that provided the platform for this current book. Our respective families made the inevitable sacrifices as we worked to bring the multi-year project to completion. We thank them all.

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