



# Preface

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## Objective of the Book

The first edition of Basic Econometrics was published thirty years ago. Over the years, there have been important developments in the theory and practice of econometrics. In each of the subsequent editions, I have tried to incorporate the major developments in the field. The fifth edition continues that tradition.

What has not changed, however, over all these years is my firm belief that econometrics can be taught to the beginner in an intuitive and informative way without resorting to matrix algebra, calculus, or statistics beyond the introductory level. Some subject material is inherently technical. In that case I have put the material in the appropriate appendix or refer the reader to the appropriate sources. Even then, I have tried to simplify the technical material so that the reader can get an intuitive understanding of this material.

I am pleasantly surprised not only by the longevity of this book but also by the fact that the book is widely used not only by students of economics and finance but also by students and researchers in the fields of politics, international relations, agriculture, and health sciences. All these students will find the new edition with its expanded topics and concrete applications very useful. In this edition I have paid even more attention to the relevance and timeliness of the real data used in the text. In fact, I have added about fifteen new illustrative examples and more than thirty new end-of-chapter exercises. Also, I have updated the data for about two dozen of the previous edition's examples and more than twenty exercises.

Although I am in the eighth decade of my life, I have not lost my love for econometrics, and I strive to keep up with the major developments in the field. To assist me in this endeavor, I am now happy to have Dr. Dawn Porter, Assistant Professor of Statistics at the Marshall School of Business at the University of Southern California in Los Angeles, as my co-author. Both of us have been deeply involved in bringing the fifth edition of Basic Econometrics to fruition.

The Indian edition of the book has been done by Dr. Sangeetha Gunasekar, who has added several Indian examples to the chapters. This has been done with the idea of helping the Indian students better understand and relate to the subject with data sets.

## Major Features of the Fifth Edition

Before discussing the specific changes in the various chapters, the following features of the new edition are worth noting:

1. Practically all of the data used in the illustrative examples have been updated.

2. Several new examples have been added, especially in the Indian context.
3. In several chapters, we have included extended concluding examples that illustrate the various points made in the text.
4. Concrete computer printouts of several examples are included in the book. Most of these results are based on EViews (version 6) and STATA (version 10), as well as MINITAB (version 15).
5. Several new diagrams and graphs are included in various chapters.
6. Several new data-based exercises are included in the various chapters.
7. Small-sized data are included in the book, but large sample data are posted on the book's website, thereby minimizing the size of the text. The website will also publish all of the data used in the book and will be periodically updated.
8. In a few chapters, we have included class exercises in which students are encouraged to obtain their own data and implement the various techniques discussed in the book. Some Monte Carlo simulations are also included in the book.
9. Multiple choice questions have been included at the end of all chapters.

## **Specific Changes to the Fifth Edition**

Some chapter-specific changes are as follows:

1. The assumptions underlying the classical linear regression model (CLRM) introduced in Chapter 3 now make a careful distinction between fixed regressors (explanatory variables) and random regressors. We discuss the importance of the distinction.
2. The appendix to Chapter 6 discusses the properties of logarithms, the Box-Cox transformations, and various growth formulas.
3. Chapter 7 now discusses not only the marginal impact of a single regressor on the dependent variable but also the impacts of simultaneous changes of all the explanatory variables on the dependent variable. This chapter has also been reorganized in the same structure as the assumptions from Chapter 3.
4. A comparison of the various tests of heteroscedasticity is given in Chapter 11.
5. There is a new discussion of the impact of structural breaks on autocorrelation in Chapter 12.
6. New topics included in Chapter 13 are missing data, non-normal error term, and stochastic, or random, regressors.
7. A non-linear regression model discussed in Chapter 14 has a concrete application of the Box-Cox transformation.
8. Chapter 15 contains several new examples that illustrate the use of logit and probit models in various fields.
9. Chapter 16 on panel data regression models has been thoroughly revised and illustrated with several applications.
10. An extended discussion of Sims and Granger causality tests is now included in Chapter 17.
11. Stationary and non-stationary time series, as well as some of the problems associated with various tests of stationarity, are now thoroughly discussed in Chapter 21.
12. Chapter 22 includes a discussion on why taking the first differences of a time series for the purpose of making it stationary may not be the appropriate strategy in some situations.

Besides these specific changes, errors and misprints in the previous editions have been corrected and the discussions of several topics in the various chapters have been streamlined.

## Organization and Options

The extensive coverage in this edition gives the instructor substantial flexibility in choosing topics that are appropriate to the intended audience. Here are suggestions about how this book may be used.

**One-semester course for the nonspecialist:** Appendix A, Chapters 1 through 9, an overview of Chapters 10, 11, 12 (omitting all the proofs).

**One-semester course for economics majors:** Appendix A, Chapters 1 through 13.

**Two-semester course for economics majors:** Appendices A, B, C, Chapters 1 to 22. Chapters 14 and 16 may be covered on an optional basis. Some of the technical appendices may be omitted.

**Graduate and postgraduate students and researchers:** This book is a handy reference book on the major themes in econometrics.

## Supplements

The book's website offers the supplementary material for the instructors as well as the students. To facilitate classroom teaching, the instructors have access to solutions manual and digital image library containing all graphs and figures in the text. For the students, the website provides web links to various online sites which they can explore for further strengthening of the concepts learnt and also data sets referenced in the book. These informative resources can be accessed at **[www.mhhe.com/sie-gujarati5e](http://www.mhhe.com/sie-gujarati5e)**