By Edward J. Kane

ECONOMIC STATISTICS AND ECONOMETRICS

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Few would deny that the American text book market has been flooded the past few decades. In spite of the fact that econometrics has been one of the most glamorous fields in economics, ironically, the market for econometrics texts has been one of the most impoverished in the academic world. There have been several excellent texts written in recent years on the subject. However, they have been far from adequate in fulfilling the need in under-graduate education in econometrics. This I know from my own frustrating experience--I found most texts either too hard or too easy for the students with whom I had to deal. For the economists who are now charged with the responsibility of teaching undergraduates in econometrics, Professor Kane's book is certainly a welcome addition to what little is available in the area. The author's basic intention of writing this book is to make econometrics, which has long been considered such an esoteric field, accessible to undergra-duates in economics.

The book is organized in five parts stressing the meaning and significance of basic concepts without much theoretical and methodological rigor. The book is intended for students with some college economics and mathematics background. Each chapter begins with an outline of the topics discussed and ends with review questions and problems. Special notes and bibliography are appended whenever appropriate.

So far as the present reviewer is concerned, the main criticism should be centered not so much on the contents and the author's methods of exposition but rather on the proportions of space devoted to various topics which are not in line with the relative weights they command. Parts II-IV, covering some three hundred pages, are devoted to standard topics which are generally covered in statistics, although the points of emphasis differ from a traditonal statistics text. It would have been much better if the book had been designed

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for students with some statistics so that more space could be devoted to econometrics proper. For students with some courses in basic statistics, topics on econometrics could have been brought up at earlier stages and treated with a little more rigor. The author does, however, attempt to conceptualize the various problem areas rather than presenting a cook-book type treatment, thereby giving the reader a deeper insight into the relationship between economic theories and traditional statistical tools.

More specifically, the author's explanation on sampling distribution seems somewhat weak. Only about one-half of a page in devoted to this important topic and it is not introduced until Chapter 8. However, the author considers this topic at length in Chapter 10 in connection with the exposition of random variable as a function defined on sample outcomes and relating them to parameter space, i.e., a distribution generated by a particular estimator. Since Chapters 8 and 9 cover normal, binomial, and "t" distribution, "Chi" square and "F" distributions could have been introduced and proper emphases given instead of presenting them only incidentally to the discussion of regression and correlation analysis.

The author does not hesitate to use calculus including partial differentiation and matrix algebra in the exposition of probability concept, maximum likelihood estimator and regression analysis. Even though exposition on the bare elements of matrix algebra is appended to the chapter on multiple regression, the explanation is much too superficial and most students of economics could be easily discouraged. Instead of devoting some fifty pages on descriptive statistics with which most students should be already familiar, some elements of calculus and matrix algebra should have been dealt with a little more rigorously and in a little more detail. Also, the discussion of assumptions on the error term (U_t) underlying the ordinary least squares mothod should have been introduced at an earlier stage in relation to regression analysis rather than deferring it until Part V in which the major econometric problems are exclusively discussed. In view of the importance of U_t and the related assumptions, repetition could be more than justified, particularly for a text book at this level of sophistication. A preliminary discussion of the six simplifying assumptions underlying the equality of the ordinary least squares and maximum likelihood estimators could have been introduced in Chapters 10 and 11, thereby stressing the

relationship between the assumptions and the sampling properties of the esti-
mators. Again in a later chapter more discussion of the assumptions and the
related tests could have been explored.

Furthermore, the existence of three types of errors---specification, sampling,
and measurement errors---is only briefly mentioned in Part I and brought up
again in Part V but the distinction is never made clear, particularly in relation
to model building and alternative estimating techniques. In fact, in Part V,
the three types of errors are all lumped together and represented by a single
error term. It certainly deserves more attention than given in this book. Part
V which is the heart and core of the subject matter is given only about 80
pages of space covering the most important conceptual problems in econometrics.
In chapter 12, in discussing celebrated Haavelmo's proposition of simultaneo
us-equation bias, the author presents a proof of the bias by the use of the
expected value operator without more intuitively appealing graphical aid. How-
ever, this deficiency is partly offset by numerous examples contrasting estimates
made by different empirical studies.

Chapter 13 discusses the identification problem with the traditional example
of supply and demand models, both graphically and algebraically providing the
error term as a linear combination of error terms in the structural equations.
It is particularly enlightening to see the exposition of partially identified
models and their estimation method in addition to a discussion of over-,
under-, and exact identification. The author's demonstration is superb. The
discussion of heteroscedasticity and autocorrelation with the aid of covariance
matrix of the error term and of the effects on the ordinary least squares
estimator is excellent. In addition the author introduces "not-so-intuitive, not-
so-theoretical" exposition of various tests and procedures for correcting the
original data for the violation of the assumptions--namely, autocorrelation and
heteroscedasticity.

For a beginning student, the discovery of what the econometrician can do
may be as encouraging as it is frustrating to the established econometrician.
With proper emphasis on the darker aspect of this "art" of handling the
unknowns for the benefit of overly ambitious students who may be led to believe
he has mastered the art after one course in this area, the author repeatedly
refers to the so-called "Malthus" problems with which the econometrician is

constantly confronted, viz., the problems of multicollinearity, autocorrelation, lack of data, time and dollar costs, heteroscedasticity, underidentification, and specification. The author concludes the book with the following remark:

> Proud as their heritage may be, econometricians have so far only begun this important task. Although the empirical literature of economics constitutes a storehouse of interesting and illuminating results, these findings remain incomplete... Significant pioneering work has been performed, but the golden age of great accomplishment lies somewhere in the future.

Indeed, when one reads through this book he cannot help but constantly be reminded of this dismal aspect of econometrics. Throughout the text, the author repeatedly warns the reader of the weaknesses inherent in hypothesis testing, emphasizing the importance of theoretical propositions or hypotheses on which all econometric models should be based. The reader is constantly reminded of the econometric methods as tools for a consistency test at its best and also of the importance of a priori restrictions on parameter space. In this time of "quantify everything spirit", well meaning students could be easily misled to feel that the quantitative results are the proof of all.

Again, the present reviewer wishes to emphasize that the only criticism is on the relative weights given to the various topics. With a better organization of materials, the book could improve markedly. At times, the author seems to be carried away, forgetting the backgrounds of the reader for whom the books was originally intended. No doubt the author is a gifted writer and teacher. His style is unique. It is always easy to criticize others' work, but this reviewer attempted to present an objective evaluation in the true spirit of professionalism. All in all, the book is an excellent text and will be cherished for many years to come by students and teachers alike.