Frontiers in Econometrics. Edited by Paul Zarembka. New York: Academic Press. 1974. 252 pp. $12.50

This book, edited by Paul Zarembka, is a useful collection of eight recent papers in Econometrics.

The first paper, by J. B. Ramsey, examines, ex post of data, the validity of the standard econometric model $y = XB + u$. The objective of the author is to see if evidence from estimated disturbances shows that the assumptions of the linear model obtain for the empirical problem under investigation. The second paper,

by K. Gaver and M. Geisel, is in two parts. Part I discusses model selection procedures based upon the classical statistical inference while Part III discusses Bayesian procedures.

The above two papers are, therefore, concerned with model discrimination and selection. The remaining papers generalize the standard linear econometric model in one way or another.

Zarembka is concerned with linear transformations on dependent and independent variables so that linear techniques become applicable to the transformed variables. The econometric problem then is how to estimate the transformed model under assumptions about the error sector.

McFadden's paper is concerned with conditional ligit analysis. More specifically it provides the theoretical basis for logit analysis, in which outcomes are viewed as a probability of a particular individual's choice, and it sets up a maximum likelihood procedure for estimation. He discusses his axiom I—"independence of Irrelevant Alternatives"—which in this context states that the probability of Y being chosen over X in a multiple choice situation where both are available, equals the probability of a binary choice of Y over X.

P.A. Swamy drops the assumption that B is a fixed Vector in $y = X - u$. He considers B random, distributed mependently of X, and the idea is to develop a procedure for estimating the mean and the variance-covariance matrix of B.

Lester Taylor questions the assumption by econometricians that the error terms are generated by distributions with *finite* variance. The implications of an infinite variance for classical analysis are disastrous, to say the least. The Gauss-Markov theorem no longer holds. An infinite variance implies thick tails and this, in turn, implies a lot of "outliers". Since O.L.S. gives outliers a lot of weight, it becomes a highly sample-dependent procedure. Taylor suggests the use of least absolute errors (L.A.E.) because it gives relatively little weight to outliers.

The main theme of the seventh paper, by Goldberger, is that econometricians have traditionally placed too much emphasis on errors in equations and too little in errors in variables. According to him, this neglect is due to the mistake of taking the permanent income model as the prototype for the errors-in-variables model. Since the permanent income model is under-identified (without Friedman's assumption that permanent consumption is proportional to, rather than merely linear in, permanent income), the errors-in-variables models have come to be associated with under-identification. The absence of any exciting problems of estimation and hypothesis testing in under-identified models has thus forced econometricians to shun these models. Goldberger shows that the permanent income model is a misleading prototype and that errors-in-varibles do not preclude identification.

The final paper, by Brundy and Jorgenson, is concerned with the class of consistent and efficient estimators for systems of simultaneous equations based on the method of instrumental variables. In large macro-econometric models involving two or three stage least squares, we require, in the "first stage", to regress each endogenous variable on the whole set of all predetermined variables which may well exceed the number of observations. Some of the papers are concerned with frontier topics; most of them illustrate the point with applied examples; and all of them have extremely useful bibliographies

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