Short-Memory Linear Processes and Econometric Applications

Description: Presents a unique focus on central limit theorems applicable to time series, spatial, and other models with various types of deterministic regressors along with concepts from established and newly developing research.

While econometric models with deterministic regressors have been around for more than half a century, the methods designed specifically to study such models have only appeared in the last decade. Short-Memory Linear Processes and Econometric Applications serves as a comprehensive source of asymptotic results for econometric models with deterministic regressors. The author provides a balanced presentation of both established and newly developed results in the field, highlighting regressors including linear trends, seasonally oscillating functions, and slowly varying functions as well as some specifications of spatial matrices in the theory of spatial models.

The book begins with central limit theorems (CLTs) for weighted sums of short-memory linear processes, which have proved to be most useful in modeling dependence over time. This discussion includes the analysis of certain operators in Lp spaces and their employment in the derivation of CLTs. Among the models considered are static linear models with slowly varying regressors, spatial models, time series autoregressions, and two nonlinear models, while the treatment of estimation procedures includes ordinary and nonlinear least squares, maximum likelihood, and method of moments. The book also contains an introduction to operators, probabilities, and linear models, Lp-approximable sequences of vectors, convergence in distribution of linear and quadratic forms, and strong convergence of least squares estimators.

Throughout the book, advanced high-quality results are included alongside new and updated research, approaches, and tools. Special attention has been paid to providing rigorous, detailed proofs with extensive cross-referencing, and all long proofs have been divided into easy-to-follow, logical parts. Methodological issues of the asymptotic theory in econometrics are highlighted and thoroughly illustrated.

Short-Memory Linear Processes and Econometric Applications is suitable for probability theory, time series, and econometric courses at the graduate and PhD level. The book also serves as an authoritative resource for econometricians, specialists working with probability, applied time series statisticians, and academics as well as for new researchers in these fields.

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