TJALLING C. KOOPMANS ECONOMETRIC THEORY PRIZE 2021–2023

Benedikt M. Pötscher   David Preinerstorfer   Zinsou Max Débaly   Lionel Truquet

Econometric Theory is proud to announce the winning articles for "The Tjalling C. Koopmans *Econometric Theory* Prize" over the period 2021–2023 inclusive. The prize is kindly supported by the Cowles Foundation, Yale University. It is named in honor of Tjalling C. Koopmans, the 1975 Nobel Laureate in Economic Science. The selection of the winning articles was made by the Advisory Board of the Journal and all articles published in *Econometric Theory* over 2021–2023 inclusive were candidates for the prize, except those that were authored or coauthored by the Editor and members of the Advisory Board. The prize is accompanied by a financial award of $1,000 to the winning authors.

The winning articles and citations, written by the Advisory Board of Econometric Theory, are as follows:

Pötscher, B. M. and D. Preinerstorfer (2023) "How Reliable are Bootstrap-Based Heteroskedasticity Robust Tests?", *Econometric Theory*, Volume 39, Issue 04, pp. 789–847.

Citation

Bootstrap-based heteroskedasticity robust tests have been suggested for linear regression models in the literature to ameliorate overrejection problems often arising with heteroskedasticity robust tests, based on standard critical values derived from asymptotic theory. While there is Monte Carlo evidence suggesting that the bootstrap can attenuate this overrejection problem, the question arises whether this observation generalizes beyond the specific Monte Carlo settings considered. In their paper, the authors establish sufficient conditions under which

bootstrap-based tests can be shown to "break down" in the sense that the size equals one. This theoretical insight can be used to check whether a given bootstrap-based test procedure should not be used in a given problem. Furthermore, the results allow the authors to conduct a numerical "stress test" on a wide variety of existing bootstrap-based test procedures, leading to the conclusion that none of these tests is immune to considerable overrejection. Thus any such bootstrap-based test is no reliable panacea for heteroskedasticity robust testing. In the paper theoretical finite-sample results concerning the size of wild bootstrap-based heteroskedasticity robust tests in linear regression models have been derived. In particular, these results provide an efficient diagnostic check, which can be used to weed out tests that are unreliable for a given testing problem in the sense that they overreject substantially. This allows the authors to assess the reliability of a large variety of wild bootstrap-based tests in an extensive numerical study.

Debaly, Z. M. and L. Truquet (2021) "Iterations of Dependent Random Maps and Exogeneity in Nonlinear Dynamics", *Econometric Theory*, Volume 37, Issue 06, pp. 1135–1172.

Citation

The authors discuss the existence and uniqueness of stationary and ergodic non-linear autoregressive processes, when exogenous regressors are incorporated into the dynamic. To this end, they consider the convergence of the backward iterations of dependent random maps. In particular, the authors derive a new result when the classical condition of contraction on average is replaced by a contraction in conditional expectation. Under some conditions, they also discuss the dependence properties of these processes using the functional dependence measure of Wu (2005, Proceedings of the National Academy of Sciences 102, 14150–14154) that delivers a central limit theorem giving a wide range of applications. The results obtained are illustrated by conditional heteroscedastic autoregressive nonlinear models, Generalized Autoregressive Conditional Heteroskedasticity (GARCH) processes, count time series, binary choice models and categorical time series, for which they provide many extensions of existing results.

Cambridge University Press joins me in congratulating the authors on their success in receiving this award.

Peter C. B. Phillips
November 2024