Literature Report

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Abstract

A social interaction model with an extreme order statistic

- Econometrics Journal---2014---Ji Tao,Lung-Fei Lee

In this paper, we introduce a social interaction econometric model with an extreme order statistic to model peer effects. We show that the model is a well-defined system of equations and that it is a static game with complete information. The social interaction model can include exogenous regressors and group effects. Instrumental variables estimators are proposed for the general model that includes exogenous regressors. We also consider distribution-free methods that use recurrence relations to generate moment conditions for estimation. For a model without exogenous regressors, the maximum likelihood approach is computationally feasible.

Estimation of discrete games with correlated types

- Econometrics Journal---2014---Haiqing Xu

In this paper, I focus on the identification and estimation of static games of incomplete information with correlated types. Instead of making the independence assumption on players' types in order to simplify the equilibrium set, I propose an approach that allows me to identify subsets of the space of covariates (i.e. publicly observed state variables in payoff functions), for which there exists a unique pure strategy Bayesian Nash equilibrium (BNE) and the equilibrium strategies are monotonic functions. Moreover, I characterize the monotonic pure strategy BNE in a simple manner and propose an estimation procedure that uses observations only from the subset of the covariate space where the game admits a unique monotonic pure strategy BNE. Furthermore, I show that the proposed estimator is n -consistent and has a limiting normal distribution.

Maximum score estimation with nonparametrically generated regressors

- Econometrics Journal---2014---Le-Yu Chen,Sokbae (Simon) Lee,Myung Jae Sung

The estimation problem in this paper is motivated by the maximum score estimation of preference parameters in the binary choice model under uncertainty in which the decision rule is affected by conditional expectations. The preference parameters are estimated in two stages. We estimate conditional expectations nonparametrically in the first stage. Then, in the second stage, we estimate the preference parameters based on the maximum score estimator of Manski, using the

choice data and first-stage estimates. This setting can be extended to maximum score estimation with non-parametrically generated regressors. In this paper, we establish consistency and derive the rate of convergence of the two-stage maximum score estimator. Moreover, we also provide sufficient conditions under which the two-stage estimator is asymptotically equivalent in distribution to the corresponding single-stage estimator that assumes the first-stage input is known. We also present some Monte Carlo simulation results for the finite-sample behaviour of the two-stage estimator.

Common breaks in time trends for large panel data with a factor structure

- Econometrics Journal---2014---Dukpa Kim

In this paper, I analyse issues related to the estimation of a common break in a large panel of time series data. Each series in the panel consists of a linear time trend and a random error. The linear time trend is subject to a break that occurs at the same date for all series. The error term is cross-sectionally correlated through a factor structure. The break date is estimated jointly with the common factors. In particular, two break date estimators are analysed: the first is obtained as an iterative solution while the second is obtained as a global solution. The asymptotic properties of these estimators are analysed under both global and local asymptotic frameworks. These two estimators are shown to be asymptotically equivalent and to achieve a faster rate of convergence than the simple break date estimator that does not take common factors into account. The limiting distributions of the proposed break date estimators are provided so that asymptotically valid confidence intervals can be formed. Monte Carlo simulation results are provided to support the theoretical results.

Point-optimal panel unit root tests with serially correlated errors

- Econometrics Journal---2014---Hyungsik Moon,Benoit Perron,Peter Phillips

Generalizations of the point-optimal panel unit root tests of Moon, Perron and Phillips (MPP) are developed to cover cases of serially correlated errors. The resulting statistics involve two modifications relative to those of MPP: (a) the error variance is replaced by the long-run variance; (b) centring of the statistic is adjusted to correct for second-order bias effects induced by the correlation between the error and lagged dependent variable.

First-differencing in panel data models with incidental functions

- Econometrics Journal---2014---Koen Jochmans

This note discusses a class of models for panel data that accommodate between-group heterogeneity that is allowed to exhibit positive within-group variance. Such a set-up generalizes the traditional fixed-effect paradigm in which between-group heterogeneity is limited to univariate factors that act like constants within groups. Notable members of the class of models considered are non-linear regression models with additive heterogeneity and multiplicative-error models suitable for non-negative limited dependent variables. The heterogeneity is modelled as a non-parametric nuisance function of covariates whose functional form is fixed within groups but is allowed to vary freely across groups. A simple approach to perform inference in such situations is based on local first-differencing of observations within a given group. This leads to moment conditions that, asymptotically, are free of nuisance functions. Conventional generalized method of moments procedures can then be readily applied. In particular, under suitable regularity conditions, such estimators are consistent and asymptotically normal, and asymptotically valid inference can be performed using a plug-in estimator of the asymptotic variance.

Indirect inference based on the score

- Econometrics Journal---2014---Peter Fuleky,Eric Zivot

The efficient method of moments (EMM) estimator is an indirect inference estimator based on the simulated auxiliary score evaluated at the sample estimate of the

auxiliary parameters. We study an alternative estimator that uses the sample auxiliary score evaluated at the simulated binding function, which maps the structural parameters of interest to the auxiliary parameters. We show that the alternative estimator has the same asymptotic properties as the EMM estimator but in finite samples behaves more like the distance-based indirect inference estimator of Gouriéroux et al.

An instrumental variable random-coefficients model for binary outcomes

- Econometrics Journal---2014---Andrew Chesher,Adam Rosen

In this paper, we study a random-coefficients model for a binary outcome. We allow for the possibility that some or even all of the explanatory variables are arbitrarily correlated with the random coefficients, thus permitting endogeneity. We assume the existence of observed instrumental variables Z that are jointly independent with the random coefficients, although we place no structure on the joint determination of the endogenous variable X and instruments Z, as would be required for a control function approach. The model fits within the spectrum of generalized instrumental variable models, and we thus apply identification results from our previous studies of such models to the present context, demonstrating their use. Specifically, we characterize the identified set for the distribution of random coefficients in the binary response model with endogeneity via a collection of conditional moment inequalities, and we investigate the structure of these sets by way of numerical illustration.

Backfitting and smooth backfitting in varying coefficient quantile regression

- Econometrics Journal---2014---Young K. Lee,Enno Mammen,Byeong U. Park

In this paper, we study ordinary backfitting and smooth backfitting as methods of fitting varying coefficient quantile models. We do this in a unified framework that accommodates various types of varying coefficient models. Our framework also covers the additive quantile model as a special case. Under a set of weak conditions, we derive the asymptotic distributions of the backfitting estimators. We also briefly report on the results of a simulation study.

Confidence sets based on inverting Anderson–Rubin tests

- Econometrics Journal---2014---Russell Davidson,James MacKinnon

Economists are often interested in the coefficient of a single endogenous explanatory variable in a linear simultaneous-equations model. One way to obtain a confidence set for this coefficient is to invert the Anderson–Rubin (AR) test. The AR confidence sets that result have correct coverage under classical assumptions. However, AR confidence sets also have many undesirable properties. It is well known that they can be unbounded when the instruments are weak, as is true of any test with correct coverage. However, even when they are bounded, their length may be very misleading, and their coverage conditional on quantities that the investigator can observe (notably, the Sargan statistic for overidentifying restrictions) can be far from correct. A similar property manifests itself, for similar reasons, when a confidence set for a single parameter is based on inverting an F-test for two or more parameters.

Testing for the stochastic dominance efficiency of a given portfolio

- Econometrics Journal---2014---Oliver Linton,Thierry Post,Yoon-Jae Whang

We propose a new statistical test of the stochastic dominance efficiency of a given portfolio over a class of portfolios. We establish its null and alternative asymptotic properties, and define a method for consistently estimating critical values. We present some numerical evidence that our tests work well in moderate-sized samples.

Posterior inference in curved exponential families under increasing dimensions

- Econometrics Journal---2014---Alexandre Belloni,Victor Chernozhukov

In this paper, we study the large-sample properties of the posterior-based inference in the curved exponential family under increasing dimensions. The curved structure arises from the imposition of various restrictions on the model, such as moment restrictions, and plays a fundamental role in econometrics and others branches of data analysis. We establish conditions under which the posterior distribution is approximately normal, which in turn implies various good properties of estimation and inference procedures based on the posterior. In the process, we also revisit and improve upon previous results for the exponential family under increasing dimensions by making use of concentration of measure. We also discuss a variety of applications to high-dimensional versions of classical econometric models, including the multinomial model with moment restrictions, seemingly unrelated regression equations, and single structural equation models. In our analysis, both the parameter dimensions and the number of moments are increasing with the sample size.

Generalized dynamic semi-parametric factor models for high-dimensional non-stationary time series

- Econometrics Journal---2014---Song Song,Wolfgang Härdle,Ya'acov Ritov

High-dimensional non-stationary time series, which reveal both complex trends and stochastic behaviour, occur in many scientific fields, e.g. macroeconomics, finance, neuroeconomics, etc. To model these, we propose a generalized dynamic semi-parametric factor model with a two-step estimation procedure. After choosing smoothed functional principal components as space functions (factor loadings), we extract various temporal trends by employing variable selection techniques for the time basis (common factors). Then, we establish this estimator's non-asymptotic statistical properties under the dependent scenario (β -mixing and m-dependent) with the weakly cross-correlated error term. At the second step, we obtain a detrended low-dimensional stochastic process that exhibits the dynamics of the original high-dimensional (stochastic) objects and we further justify statistical inference based on this. We present an analysis of temperature dynamics in China, which is crucial for pricing weather derivatives, in order to illustrate the performance of our method. We also present a simulation study designed to mimic it.

Advances in Robust and Flexible Inference in Econometrics: A Special Issue in Honour of Joel L. Horowitz

- Econometrics Journal---2014---Xiaohong Chen,Sokbae (Simon) Lee,Oliver Linton,Elie Tamer

2014

Weighted composite quantile regression estimation of DTARCH models

- Econometrics Journal---2014---Jiancheng Jiang,Xuejun Jiang,Xinyuan Song

In modelling volatility in financial time series, the double-threshold autoregressive conditional heteroscedastic (DTARCH) model has been demonstrated as a useful variant of the autoregressive conditional heteroscedastic (ARCH) models. In this paper, we propose a weighted composite quantile regression method for simultaneously estimating the autoregressive parameters and the ARCH parameters in the DTARCH model. This method involves a sequence of weights and takes a data-driven weighting scheme to maximize the asymptotic efficiency of the estimators. Under regularity conditions, we establish asymptotic distributions of the proposed estimators for a variety of heavy- or light-tailed error distributions. Simulations are conducted to compare the performance of different estimators, and the proposed approach is used to analyse the daily S&P 500 Composite index, both of which endorse our theoretical results.

Multivariate variance targeting in the BEKK–GARCH model

- Econometrics Journal---2014---Rasmus Pedersen,Anders Rahbek

In this paper, we consider asymptotic inference in the multivariate BEKK model based on (co)variance targeting (VT). By definition the VT estimator is a two-step estimator and the theory presented is based on expansions of the modified likelihood function, or estimating function, corresponding to these two steps. Strong consistency is established under weak moment conditions, while sixth-order moment restrictions are imposed to establish asymptotic normality. The simulations included indicate that the multivariately induced higher-order moment constraints are necessary.

Estimation of state-space models with endogenous Markov regime-switching parameters

- Econometrics Journal---2014---Kyu H. Kang

This study proposes and estimates state-space models with endogenous Markov regime-switching parameters. It complements regime-switching dynamic linear models by allowing the discrete regime to be jointly determined with observed or unobserved continuous state variables. The estimation framework involves a Bayesian Markov chain Monte Carlo scheme to simulate the latent state variable that controls the regime shifts. A simulation exercise shows that neglecting endogeneity leads to biased inference. This method is then applied to the dynamic Nelson–Siegel yield curve model where the unobserved time-varying level, slope and curvature factors are contemporaneously correlated with the Markov-switching volatility regimes. The estimation results indicate that the high volatility tends to be associated with positive innovations in the level and slope factors. More importantly, we find that the endogenous regime-switching dynamic Nelson–Siegel model outperforms the model with and without exogenous regime-switching in terms of out-of-sample prediction accuracy.

Estimation of fixed effects panel data partially linear additive regression models

- Econometrics Journal---2014---Chunrong Ai,Jinhong You,Yong Zhou

In this paper, we investigate the estimation problem of fixed effects panel data partially linear additive regression models. Semi-parametric fixed effects panel data regression models are tools that are well suited to econometric analysis and the analysis of cDNA microarrays. By applying a polynomial spline series approximation and a profile least-squares procedure, we propose a semi-parametric least-squares dummy variables estimator (SLSDVE) for the parametric component and a series estimator for the non-parametric component. Under very weak conditions, we show that the SLSDVE is asymptotically normal and that the series estimator achieves the optimal convergence rate of the non-parametric regression. In addition, we propose a two-stage local polynomial estimation for the non-parametric component by applying the additive structure and the series estimator. The resultant estimator is asymptotically normal and the asymptotic distribution of each additive component is the same as it would be if the other components were known with certainty. We conduct simulation studies to demonstrate the finite sample performance of the proposed procedures and we also present an illustrative empirical application.

Direct semi-parametric estimation of fixed effects panel data varying coefficient models

- Econometrics Journal---2014---Juan M. Rodriguez-Poo,Alexandra Soberon

In this paper, we present a new technique to estimate varying coefficient models of unknown form in a panel data framework where individual effects are arbitrarily correlated with the explanatory variables in an unknown way. The estimator is based on first differences and then a local linear regression is applied to estimate the unknown coefficients. To avoid a non-negligible asymptotic bias, we need to introduce a higher-dimensional kernel weight. This enables

us to remove the bias at the price of enlarging the variance term and, hence, achieving a slower rate of convergence. To overcome this problem, we propose a one-step backfitting algorithm that enables the resulting estimator to achieve optimal rates of convergence for this type of problem. It also exhibits the so-called oracle efficiency property. We also obtain the asymptotic distribution. Because the estimation procedure depends on the choice of a bandwidth matrix, we also provide a method to compute this matrix empirically. The Monte Carlo results indicate the good performance of the estimator in finite samples.

Improved Lagrange multiplier tests in spatial autoregressions

- Econometrics Journal---2014---Peter M. Robinson,Francesca Rossi

For testing lack of correlation against spatial autoregressive alternatives, Lagrange multiplier tests enjoy their usual computational advantages, but the (x -super-2) first-order asymptotic approximation to critical values can be poor in small samples. We develop refined tests for lack of spatial error correlation in regressions, based on Edgeworth expansion. In Monte Carlo simulations, these tests, and bootstrap tests, generally significantly outperform x -super-2-based tests.

Identification-robust inference for endogeneity parameters in linear structural models

- Econometrics Journal---2014---Firmin Doko Tchatoka,Jean-Marie Dufour

We provide a generalization of the Anderson–Rubin (AR) procedure for inference on parameters that represent the dependence between possibly endogenous explanatory variables and disturbances in a linear structural equation (endogeneity parameters). We stress the distinction between regression and covariance endogeneity parameters. Such parameters have intrinsic interest (because they measure the effect of latent variables, which induce simultaneity) and play a central role in selecting an estimation method (such as ordinary least-squares or instrumental variable methods). We observe that endogeneity parameters might not be identifiable and we give the relevant identification conditions. These conditions entail a simple identification correspondence between regression endogeneity parameters and the usual structural parameters, while the identification of covariance endogeneity parameters typically fails as soon as global identification fails. We develop identification-robust finite-sample tests for joint hypotheses involving structural and regression endogeneity parameters, as well as marginal hypotheses on regression endogeneity parameters. For Gaussian errors, we provide tests and confidence sets based on standard Fisher critical values. For a wide class of parametric non-Gaussian errors (possibly heavy-tailed), we show that exact Monte Carlo procedures can be applied using the statistics considered. As a special case, this result also holds for usual AR-type tests on structural coefficients. For covariance endogeneity parameters, we supply an asymptotic (identification-robust) distributional theory. Tests for partial exogeneity hypotheses (for individual potentially endogenous explanatory variables) are covered as special cases. The proposed tests are applied to two empirical examples: the relation between trade and economic growth, and the widely studied problem of returns to education.

Stochastic equicontinuity in nonlinear time series models

- Econometrics Journal---2014---Andreas Hagemann

In this paper, I provide simple and easily verifiable conditions under which a strong form of stochastic equicontinuity holds in a wide variety of modern time series models. In contrast to most results currently available in the literature, my methods avoid mixing conditions. I discuss several applications in detail.

A Review of Unit Root Tests in Time Series: Volumes 1 and 2

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Predictability of shapes of intraday price curves

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A stochastic volatility model with random level shifts and its applications to S&P 500 and NASDAQ return indices

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Estimating and testing multiple structural changes in linear models using band spectral regressions

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Heteroscedasticity-robust C(p) model averaging

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Consistent co-trending rank selection when both stochastic and non-linear deterministic trends are present

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A Review of Non-Parametric Econometrics

- Econometrics Journal---2013---Patrick Marsh

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Local NLLS estimation of semi-parametric binary choice models

- Econometrics Journal---2013---Jason Blevins,Shakeeb Khan

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The projection approach for unbalanced panel data

- Econometrics Journal---2013---Jason Abrevaya

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Orthogonal to backward mean transformation for dynamic panel data models

- Econometrics Journal---2013---Gerdie Everaert

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Testing panel cointegration with unobservable dynamic common factors that are correlated with the regressors

- Econometrics Journal---2013---Jushan Bai,Josep Lluís Carrion-i-Silvestre,Josep Lluís Carrion-i-Silvestre

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Semi-parametric estimation of a generalized threshold regression model under conditional quantile restriction

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Instrumental variables estimation and inference in the presence of many exogenous regressors

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Partial identification in asymmetric auctions in the absence of independence

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Estimation of spatial autoregressive models with randomly missing data in the dependent variable

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Set inference in latent variables models

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Standardized LM tests for spatial error dependence in linear or panel regressions

- Econometrics Journal---2013---Badi Baltagi,Zhenlin Yang

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- Econometrics Journal---2013---Christian Bontemps,Elie Tamer

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A Review of Structural Macroeconometrics by DeJong (David N.) and Dave (Chetan)

- Econometrics Journal---2012---Christoph Görtz

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A Review of The Oxford Handbook of Bayesian Econometrics edited by Geweke (John), Koop (Gary) and van Dijk (Herman)

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Testing for common trends in semi-parametric panel data models with fixed effects

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Unit root tests for panel data with AR(1) errors and small T

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On the problem of inference for inequality measures for heavy-tailed distributions

- Econometrics Journal---2012---Christian Schluter

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- Econometrics Journal---2012---Jingjing Yang

2012

Royal Economic Society Annual Conference 2009 Special Issue on Factor Models: Theoretical and Applied Perspectives

- Econometrics Journal---2011---Pierre Perron,Richard J. Smith

2011

Quantile regression models with factor-augmented predictors and information criterion

- Econometrics Journal---2011---Tomohiro Ando,Ruey S. Tsay

For situations with a large number of series, N, each with T observations and each containing a certain amount of information for prediction of the variable of interest, we propose a new statistical modelling methodology that first estimates the common factors from a panel of data using principal component analysis and then employs the estimated factors in a standard quantile regression. A crucial step in the model-building process is the selection of a good model among many possible candidates. Taking into account the effect

of estimated regressors, we develop an information-theoretic criterion. We also investigate the criterion when there is no estimated regressors. Results of Monte Carlo simulations demonstrate that the proposed criterion performs well in a wide range of situations.

A hierarchical factor analysis of U.S. housing market dynamics

- Econometrics Journal---2011---Emanuel Moench,Serena Ng

This paper studies the linkages between housing and consumption in the United States taking into account regional variation. We estimate national and regional housing factors from a comprehensive set of U.S. price and quantity data available at mixed frequencies and over different time spans. Our housing factors pick up the common components in the data and are less affected by the idiosyncratic noise in individual series. This allows us to get more reliable estimates of the consumption effects of housing market shocks. We find that shocks at the national level have large cumulative effects on retail sales in all regions. Though the effects of regional shocks are smaller, they are also significant. We analyse the driving forces of housing market activity by means of factor-augmented vector autoregressions. Our results show that lowering mortgage rates has a larger effect than a similar reduction of the federal funds rate. Moreover, lower consumer confidence and stock prices can slow the recovery in the housing market.

Testing for sphericity in a fixed effects panel data model

- Econometrics Journal---2011---Badi Baltagi,Qu Feng,Chihwa Kao

This paper proposes a test for the null of sphericity in a fixed effects panel data model. It uses the Random Matrix Theory based approach of Ledoit and Wolf to test for the null of sphericity of the error terms in a fixed effects panel model with a large number of cross-sectional units and time series observations. Because the errors are unobservable, the residuals from the fixed effects regression are used. The limiting distribution of the proposed test statistic is derived. In addition, its finite sample properties are examined using Monte Carlo simulations.

Short-term forecasts of euro area GDP growth

- Econometrics Journal---2011---Elena Angelini,Gonzalo Camba-Mendez,Domenico Giannone,Lucrezia Reichlin,Gerhard Rünstler,Gonzalo Camba-Mendez

This paper evaluates models that exploit timely monthly releases to compute early estimates of current quarter GDP (now-casting) in the euro area. We compare traditional methods used at institutions with a new method proposed by Giannone et al. The method consists in bridging quarterly GDP with monthly data via a regression on factors extracted from a large panel of monthly series with different publication lags. We show that bridging via factors produces more accurate estimates than traditional bridge equations. We also show that survey data and other 'soft' information are valuable for now-casting.

Weak and strong cross-section dependence and estimation of large panels

- Econometrics Journal---2011---Alexander Chudik,M Pesaran,Elisa Tosetti

This paper introduces the concepts of time-specific weak and strong cross-section dependence, and investigates how these notions are related to the concepts of weak, strong and semi-strong common factors, frequently used for modelling residual cross-section correlations in panel data models. It then focuses on the problems of estimating slope coefficients in large panels, where cross-section units are subject to possibly a large number of unobserved common factors. It is established that the common correlated effects (CCE) estimator introduced by Pesaran remains asymptotically normal under certain conditions on factor loadings of an infinite factor error structure, including cases where methods relying on principal components fail. The paper concludes with a set of Monte Carlo experiments

where the small sample properties of estimators based on principal components and CCE estimators are investigated and compared under various assumptions on the nature of the unobserved common effects.

The Hausman test in a Cliff and Ord panel model

- Econometrics Journal---2011---Jan Mutl,Michael Pfaffermayr

This paper studies the random effects model and the fixed effects model for spatial panel data. The model includes a Cliff and Ord type spatial lag of the dependent variable as well as a spatially lagged one-way error component structure, accounting for both heterogeneity and spatial correlation across units. We discuss instrumental variable estimation under both the fixed and the random effects specifications and propose a spatial Hausman test which compares these two models accounting for spatial autocorrelation in the disturbances. We derive the large sample properties of our estimation procedures and show that the test statistic is asymptotically chi-square distributed. A small Monte Carlo study demonstrates that this test works well even in small panels.

Fully modified narrow-band least squares estimation of weak fractional cointegration

- Econometrics Journal---2011---Morten Nielsen,Per Frederiksen

We consider estimation of the cointegrating relation in the weak fractional cointegration model, where the strength of the cointegrating relation (difference in memory parameters) is less than one-half. A special case is the stationary fractional cointegration model, which has found important applications recently, especially in financial economics. Previous research on this model has considered a semi-parametric narrow-band least squares (NBLS) estimator in the frequency domain, but in the stationary case its asymptotic distribution has been derived only under a condition of non-coherence between regressors and errors at the zero frequency. We show that in the absence of this condition, the NBLS estimator is asymptotically biased, and also that the bias can be consistently estimated. Consequently, we introduce a fully modified NBLS estimator which eliminates the bias, and indeed enjoys a faster rate of convergence than NBLS in general. We also show that local Whittle estimation of the integration order of the errors can be conducted consistently based on NBLS residuals, but the estimator has the same asymptotic distribution as if the errors were observed only under the condition of non-coherence. Furthermore, compared to much previous research, the development of the asymptotic distribution theory is based on a different spectral density representation, which is relevant for multivariate fractionally integrated processes, and the use of this representation is shown to result in lower asymptotic bias and variance of the narrow-band estimators. We present simulation evidence and a series of empirical illustrations to demonstrate the feasibility and empirical relevance of our methodology.

Corrigendum to ‘Likelihood-based cointegration tests in heterogeneous panels’ (Larsson R., J. Lyhagen and M. Löthgren, Econometrics Journal, 4, 2001, 109–142)

- Econometrics Journal---2011---Deniz Karaman Örsal,Bernd Droge

2011

Corrigendum to ‘A Gaussian approach for continuous time models of short-term interest rates’ (Yu, J. and P. C. B. Phillips, Econometrics Journal, 4, 210–24)

- Econometrics Journal---2011---Peter Phillips,Jun Yu

2011