UNIVERSITY OF BIRMINGHAM | Birmingham Business School | Department of Economics

9th Biennial Gretl Conference

Programme and Book of Abstracts

June 19-20, 2025,
University of Birmingham,
Birmingham, England

Hosted and sponsored by the
Group for Research in Econometrics and Data Science (GREADS) and the Department of Economics at the Birmingham Business School

Global conference website:
https://gretlconference.org/index.php/category/gc2025/

Local conference website:
https://www.birmingham.ac.uk/schools/business/events/2025/gretl-conference-2025

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Gretl Organizing Committee

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Sven Schreiber
Free University Berlin, Germany
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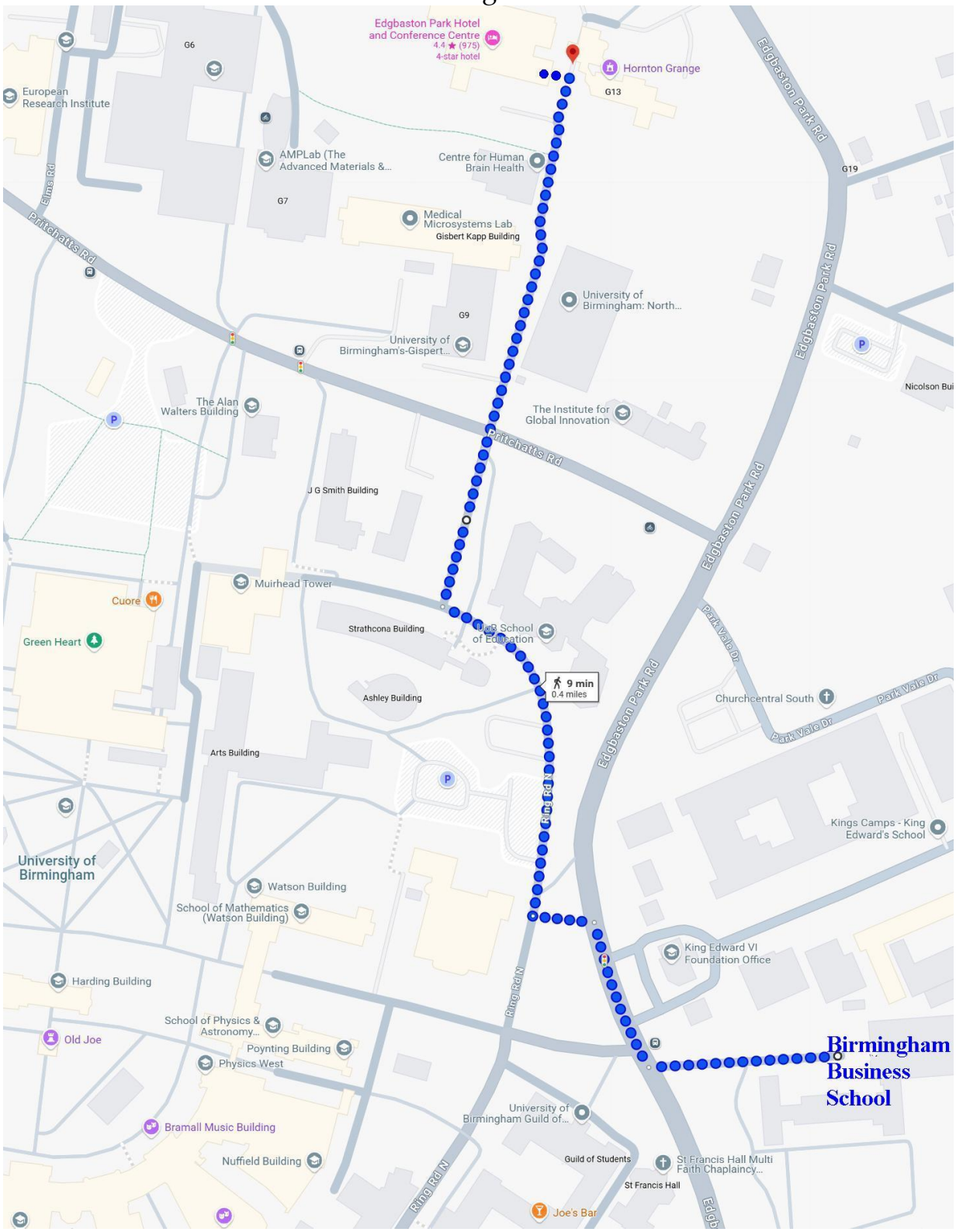
Local Map

Nine minutes walking directions on Google Maps, from the Edgbaston Park Hotel to the Birmingham Business School:
https://www.google.com/maps/dir/52.4498067,-1.9251558/52.4539917,-1.926995

Seminars are in room G07 of the Birmingham Business School



Conference programme

June 18, 2025 Wednesday
19.00 Informal get-together dinner at the 1900 Bar (or 1900 Restaurant), Edgbaston Park Hotel and Conference Centre, 53 Edgbaston Park Rd, Birmingham B15 2RS,
https://www.edgbastonparkhotel.com
Google Maps: https://www.google.com/maps?q=52.454,-1.9275
WhatThreeWords grid reference: ///peanut.spend.origin
(payment for dinner not included in conference fee)

June 19, 2025, Thursday,
Room G07 in the Birmingham Business School
Google Maps: www.google.com/maps?q=52.4498,-1.9242
WhatThreeWords grid reference: ///dock.claims.belts

9:15-9:30 Opening welcome by Marco Barassi and Joanne Ercolani, leaders of GREADS at The University of Birmingham.

Session I chair: Riccardo (Jack) Lucchetti
9:30-10:10 Chiara Casoli, Università degli Studi dell'Insubria
Luca Pedini, Fondazione Eni Enrico Mattei
Measuring spillovers and connectedness in gretl
10:10-10:50 Cristián Ducoing Ruiz, Universidad Pública de Navarra
Super cycle? Which Super Cycle? Using Gretl to Analyse Copper Prices in Historical Perspective 1790 - 2025
10:50-11:05 Coffee/Tea break – Room G06
11:05-11:45 Kinga Nowacka, Uniwersytet SWPS
Automating Operational Risk Identification in Construction Projects: A Comparative Study of Logistic, Bayesian, and Machine Learning Approaches

11:45-12:45 Keynote presentation by Anindya Banerjee, University of Birmingham
Investigating (co)-integration in panels with cross section dependence.

12:45-13:45 Lunch
(Old Library) Staff Meeting Room (G38), Birmingham Business School

Session II chair: Allin Cottrell
13:45-14:25 Paolo Chirico, Università degli Studi di Torino
svm_qml: a gretl function for quasi maximum likelihood estimation of stochastic volatility models
14:25-15:05 Marcin Błażejowski, WSB Merito University in Torun
gretl4py: a package for calling libgretl from Python
15:05-15:20 Coffee/Tea break – Room G06
15:20-16:00 Artur Tarassow, Brandenburg University of Applied Sciences
An Introduction to Gretl and Hansl Scripting: A Comprehensive Course
16:00-16:40 Sven Schreiber, Macroeconomic Policy Institute
Weather shocks in Germany
16:40-17:15 Riccardo (Jack) Lucchetti, Università Politecnica delle Marche
Gretl downloads report
17:15-18:00 Gretl Association meeting

20:00 Conference dinner, Edgbaston Park Hotel and Conference Centre, 53 Edgbaston Park Rd, Birmingham B15 2RS, https://www.edgbastonparkhotel.com
Google Maps: https://www.google.com/maps?q=52.454,-1.9275
WhatThreeWords: ///form.steep.amber
(Payment for dinner is included in conference fee)

June 20, 2025 Friday
Room G07 in the Birmingham Business School
Google Maps: www.google.com/maps?q=52.4498,-1.9242
WhatThreeWords: ///dock.claims.belts

Session III chair: Sven Schreiber
9:30-10:10 Marco G. Ercolani, University of Birmingham
Extending Gretl's VECM command to allow for constants and trends in both the long-run and short-run equations
10:10-10:50 Marcin Błażejowski, WSB Merito University in Torun
Pawel Kufel, WSB Merito University in Torun
Jacek Kwiatkowski, Nicolaus Copernicus University
BMA-VAR, a package proposal for Bayesian Averaging of VAR models (in gretl)
10:50-11:05 Coffee/Tea break – Room G06
11:05-11:45 Luca Pedini, Fondazione Eni Enrico Mattei
Bayesian VARs in gretl: an update
11:45-12:45 Allin Cottrell, Wake Forest University
New developments for Gretl function packages

12:45-13:45 Lunch
(Old Library) Staff Meeting Room (G38), Birmingham Business School

Session IV chair: Marcin Błażejowski
13:45-14:25 Riccardo Ievoli, University of Ferrara
Lucio Palazzo, University of Naples L'Orientale.
Fitting and Diagnosing Integer Autoregressive Models in GRETL: the INAR package
14:25-15:05 Giulio Palomba, Università Politecnica delle Marche
Marco Tedeschi, Università Politecnica delle Marche
The Connect package
15:05-15:45 Francesca Di Iorio, Università degli Studi di Napoli Federico II
Riccardo "Jack" Lucchetti, Università Politecnica delle Marche
Measuring the Green TFP with gretl

16:00 A random walk around The University of Birmingham campus in search of culture and refreshment.
20.00 Unofficial Dinner: meeting place will be set spontaneously
(payment for dinner not included in conference fee)

Call for Papers

The editors of *Computational Statistics* have kindly agreed to consider the papers from GC 2025 for publication in their journal, with members of the gretl team participating as guest editors. Submission details will follow. The following timetable is proposed:

July 21, 2025	Deadline to submit papers
August 11, 2025	First notification to authors
August 25, 2025	Deadline to submit revised papers
September 6, 2025	Review of first revision communicated to authors
September 15, 2025	Deadline to submit the second revised version
September 22, 2025	Review of second revision communicated to authors
September 30, 2025	Completion of remaining reviews and final decision

If all authors and reviewers can meet this timetable, the selected papers will appear in a Special Issue in late 2025. Otherwise some flexibility will be available, with some papers possibly divided across more than one issue of the journal.

Abstracts

(Alphabetically by author(s))

Anindya Banerjee, University of Birmingham

Investigating (co)-integration in panels with cross section dependence.

The keynote provides some thoughts on the methods developed in the literature on dealing with cross section dependence in panels in studying integration and cointegration. In particular it offers an assessment and comparison of methods that rely primarily on the methodology developed by Bai and Ng versus the cross-sectional augmentation approach pioneered and recommended by Pesaran inter alia.

Marcin Błażejowski, WSB Merito University in Torun

gretl4py: a package for calling libgretl from Python

The gretl4py1 package is a software collection that provides an interface between libgretl [Cottrell and Lucchetti, 2024] and Python3.xx (with tested support for versions 3.11, 3.12, and 3.13). The idea of developing such a bridge between Python—a widely used programming language, particularly in scientific analysis—and libgretl had been circulating within the gretl community for some time. During the last developers' meeting, which took place in Berlin in July 2024, it became evident that implementing a binary binding for Python is not a particularly complex task when using the pybind11 package [see Jakob et al., 2017, for details]. As a result, I released the first working version of the code just two days after the Berlin meeting concluded. Since then, with the invaluable support of the gretl development team, we have reached version 0.1, which provides basic data management functionality and access to native libgretl estimators. The gretl4py package consists of the following components: binary bindings written in C++, a Model class implemented in Python (see Section 2.4), a set of utility functions implemented in Python (see Sections 2.1–2.2). At the C++ level, in addition to pybind11, we utilize additional libraries such as simdjson [see Keiser and Lemire, 2024, for details] and mapbox/variant (see https://github.com/mapbox/variant) for macOS versions earlier than 10.14. The gretl4py package is available for MS Windows, macOS, and Linux. The project's official website can be accessed at https://gretl.sourceforge.net/gretl4py.html

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Marcin Błażejowski, WSB Merito University in Torun
Pawel Kufel, WSB Merito University in Torun
Jacek Kwiatkowski, Nicolaus Copernicus University

BMA-VAR, a package proposal for Bayesian Averaging of VAR models (in gretl)

Bayesian Model Averaging (BMA) has a long history in econometrics, with several key contributions, including Kass and Raftery [1995], Raftery [1995, 1996], Fern´andez et al. [2001a,b], Ley and Steel [2007, 2009], Dop- pelhofer and Weeks [2009]. The typical approach relies on Marginal Data Density (MDD) and utilizes Bayes Factors for model selection. The two most critical challenges in this framework are: selecting an effective search path, calculating MDD. The first challenge, historically computationally intensive, is now significantly less problematic due to the availability of both efficient algorithms (such as MCMCMC (MC3)) and powerful computing resources. MDD calculation, however, remains challenging. There are two main approaches to address this issue. The first relies on approximations, often using variants of the Bayesian Information Criterion (BIC), as discussed in Schwarz [1978], Haughton [1988], Bollen et al. [2014]. Another commonly used approximation involves the harmonic mean, though it is known to suffer from certain limitations. The second approach leverages natural conjugate priors, allowing for closed-form MDD calculations. However, even with this method, analytical MDD computation can be demanding for medium and large VAR models. Our approach adopts the latter strategy. While the package is still under development, and certain components – such as parameter estimation and impulse response function (IRF) calcula- tions – may undergo modifications, our MC3 implementation appears to be well-developed. When combined with our MDD computation code, adapted from the Matlab implementation by Giannone et al. [2015], it enables highly efficient computations. As an empirical illustration, we will demonstrate the functionality of the package and evaluate its computational efficiency using selected VAR models from the macroeconomics literature.

Chiara Casoli, Universit`a degli Studi dell'Insubria
Luca Pedini, Fondazione Eni Enrico Mattei

Measuring spillovers and connectedness in gretl

This article presents a new package for dealing with connectedness measures, as proposed in Diebold and Yilmaz (2009) (and extended in Diebold and Yilmaz, 2012; Diebold and Yılmaz, 2014, hereafter, DY). The h-step ahead

connectedness `a la DY is defined in terms of variance decomposition and is generally derived from the estimation of a VAR model. We propose gretl functions that compute the static and dynamic connectedness indices. Finally, we test our workflow in a financial application on the connectedness of global stock market returns.

Paolo Chirico, Università degli Studi di Torino

svm_qml: a gretl function for quasi maximum likelihood estimation of stochastic volatility models

The paper presents a gretl function, called svm qml, that can be used for QML estimation of stochastic volatility models. In addition to the basic QLM method for un-leveraged volatility, the function allows two alternative methods for dealing with leveraged volatility (asymmetric volatility). The function also covers integrated volatility, both symmetric and non-symmetric.

Francesca Di Iorio, Università degli Studi di Napoli Federico II
Riccardo "Jack" Lucchetti, Università Politecnica delle Marche

Measuring the Green TFP with gretl

Measuring the Green TFP typically requires the usage of panel stochastic frontier models, that were not available in gretl until recently. This paper fills this gap and presents an example application.

Cristián Ducoing, Public University of Navarre and Lund University

Super cycle? Which Super Cycle? Using Gretl to Analyse Copper Prices in Historical Perspective 1790 - 2025

In this article, we analyse the price of copper using the tools provided by Gretl. Our objective is to estimate the existence (or absence) of a Super-Cycle in the period 2000-2010. To achieve this objective, we will use two approaches. First, we will test the existence of structural breaks in the series (1790 - 2025) with the aim of identifying where there have been changes in the prices statistically significant to initiate a new equilibrium. Second, we will use filters with different parameters to test the existence of a new cycle in the recent period. Economic history has gained a noticeable place as a value discipline in Economics as a "natural lab". Long-run series and an analysis of economic

phenomena in the past give insight for the present research. However, economic historians have not taken advantage of the potential of the discipline to influence current debates such as inequality, sustainability, and productivity. One of the big debates related to some of the aforementioned challenges is about the long-term price of commodities. As the energy transition advances faster than predicted, better knowledge is needed on commodity trends and how technological disruptions and shocks affected their long-term trends.

Marco G. Ercolani, University of Birmingham

Extending Gretl's VECM command to allow for constants and trends in both the long-run and short-run equations

A simple extension to Gretl's vecm command is proposed, allowing it to report vector error correction models (VECMs) in which constants and trends can be present in both the long-run (cointegrating) equations and short-run (dynamic) equations. This extension can be incorporated into a new Gretl function package that uses the vecm command to perform the initial, intricate part of the estimation. Thereafter, the orthogonalisation of long-run versus short-run constant and trend parameters is a relatively straightforward procedure using least squares methods. Søren Johansen's original implementation of the VECM was concerned solely with the correct incorporation of constants and trends to ensure that the long-run parameters could be estimated consistently. Gretl's vecm command implements VECM estimation as specified by Johansen, with constant and trend parameters appearing only in either the long-run or short-run equations. However, if the constant and trend parameters appear in both the long-run and short-run equations, the resulting error correction terms (ECTs) can be centred at zero. ECTs that are centred at zero provide a natural normalisation, which can be interpreted as indicating that the long-run data-generating system is above or below the long-run equilibrium. Other extensions can also be incorporated into the function package, such as different formulae for calculating the degrees of freedom, thereby affecting the diagnostic tests. This Gretl function package would facilitate cross-validation of results with other statistical software to identify the reasons for differences in output.

Riccardo Ievoli, University of Ferrara
Lucio Palazzo, University of Naples L'Orientale.

Fitting and Diagnosing Integer Autoregressive Models in GRETL: the INAR package

Integer Autoregressive models (INAR) represent a class of observation-driven models where count or discrete data are modeled as a function of the past observations adding a noise term (Al-Osh and Alzaid 1987; Du and Li 1991). Regarding the estimation, the conventional approaches based on the method of the moments or conditional least squares require the specification of parametric assumptions for the model's innovations (Latour 1998; Silva and Silva 2006; Bu et al 2008; Scotto et al 2015). Therefore, Drost et al (2009) proposed an approach based on the semiparametric likelihood. An associated research stream addresses the issue of testing for serial dependence in count temporal data, mainly because conventional methods for continuous data may not be appropriate under this setting (Jung and Tremayne 2011). To this end, Jung and Tremayne (2003) proposed a test statistic based on the INAR(1) score function under Poisson innovations. This proposal has been recently discussed and developed by Larsson (2020). Then, Sun and McCabe (2013) extended this approach to a broader class of parametric arrivals (such as the Katz family and the Generalized Poisson). Furthermore, Harris and McCabe (2019) developed a new flexible diagnostic test based on the semiparametric likelihood, denoted as the "effective" score test. Under the null hypothesis, all these score-based statistics can generally be approximated in large samples by standard parameter-free distributions (e.g., Normal or Chi-squared). For some recent developments, there is an emerging literature concerning suitable bootstrap methods in the case of INAR models. These bootstraps have been developed to produce more reliable inference in point estimation (Weiß and Jentsch 2019), confidence bounds (Jentsch and Weiß 2019) and forecasting (Bisaglia and Gerolimetto 2019). In addition, Palazzo and Ievoli (2022) proposed two restricted bootstrap algo- rithms to improve the performance of the score test for serial dependence in the case of Poisson INAR. Regarding the applicability of those methods for practitioners, few tools are cur- rently available through dedicated software. The users of Julia can refer to the package CountTimeSeries.jl for estimation purposes (Stapper 2021). An R package named spINAR has been implemented (Faymonville et al 2024), providing parametric and semiparametric estimation, even improved by bootstrap-based confidence bounds (Jentsch and Weiß 2019). A possible drawback of these two packages is the lack of score-based statistics to test for serial dependence. There is a gap regarding INAR estimation and diagnostic tests in other open source software such as Gretl; to the best of our knowledge, in the past only Palazzo (2019) proposed a routine in Gretl to obtain (conditional) maximum likelihood parameter estimates of INAR models under Poisson and Negative Binomial innovations.

Kinga Nowacka, Uniwersytet SWPS

Automating Operational Risk Identification in Construction Projects: A Comparative Study of Logistic, Bayesian, and Machine Learning Approaches

Risk management remains one of the most critical and complex challenges in organizational decision-making. This complexity arises from the inherently multidimensional nature of risk, compounded by dynamic market conditions, incomplete information, and limited predictability of future events. A particularly important element is the subjective nature of risk assessment, as risk gradation often depends heavily on individual perceptions.
In the construction sector, projects are inherently directed, finite, and acyclic, rendering each investment unique. Yet, despite this uniqueness, construction processes tend to be repetitive, enabling the identification of patterns and dependencies through systematic analysis. This study explores the automation of risk identification within construction projects, specifically targeting operational risks related to potential budget and schedule overruns. We evaluate the effectiveness of three quantitative approaches to risk identification, leveraging data from monthly project reports compiled by contract managers during project execution. All econometric analyses were conducted using the gretl software.

The first approach employs a traditional econometric logistic regression model, where variable selection and modeling stages are manually guided by expert knowledge. While this approach benefits from domain expertise, it presents practical limitations in scalability and automation. The second approach applies Bayesian Averaging of Classical Estimates (BACE), combining classical econometric estimates with Bayesian inference to address model uncertainty effectively. BACE offers computational efficiency, facilitating the analysis of large variable sets and the probabilistic identification of key risk factors, including their co-occurrence. The third approach leverages machine learning techniques within logistic regression modeling. By using optimization algorithms, this method automates pattern recognition, enhances predictive accuracy, and mitigates issues such as multicollinearity and overfitting. Furthermore, it enables the detection of non-linear interactions among variables, providing deeper insights into risk dynamics.

Giulio Palomba, Università Politecnica delle Marche
Marco Tedeschi, Università Politecnica delle Marche

The Connect package

This package concerns the estimation of static and dynamic connectivity

measures useful for establishing whether contagion or spillover transmission is taking place between different time series. In general, joint connectedness frameworks estimated using a two-step approach: the first step consists of the estimation of a multivariate time series model (e.g. VAR, Quantile VAR, LASSO VAR, or Time-Varying VAR models) in order to filter out correlations from data. The second step proceeds with the computation of the connectedness frameworks which are based on the result obtained in the previous step. The initial version of the package is inspired by the R package ConnectednessApproach, which contains many functions that allow you to determine whether any connection exists between time series. The real goal, therefore, is to try to replicate (almost) all of the functions in gretl.

Luca Pedini, Fondazione Eni Enrico Mattei

Bayesian VARs in gretl: an update

This article proposes an overview of the recent implemented features in the BVAR package, alongside with the current state of the work and the future developments. Version 0.4 has introduced major improvements, fixing bugs, improving the computational time of the samplers (especially when it comes to high-dimensional models) and adding functions and options for plot customization. Simultaneously, the integration with the SVAR environment for dealing with structural analysis has started in the direction of including more general identification schemes, such as short-run restrictions or sign restrictions.

Sven Schreiber, Macroeconomic Policy Institute

Weather Fluctuations and the (German) Economy

We contribute to the recent literature on the economic effects of those weather conditions that deviate from their regular seasonal pattern. To this end we use local temperature and snow measurements across Germany to analyze their impact on German monthly total industrial and construction-sector production. We find noticeable effects of the various (linear and nonlinear, contemporaneous and dynamic) weather regressors, which in the –seasonally adjusted– construction sector growth data imply an extra explanatory power of more than 50% of the variation, compared to benchmark predictive regressions. Several shrinkage and selection estimators are compared. As expected, the impact is quite a bit less in total industrial production. From our estimates we obtain (seasonally as well as) weather adjusted production

series, and our regression-based approach also yields confidence intervals for these adjustments. The estimated adjustments are quantitatively relevant also for broad output (quarterly GDP).

Artur Tarassow, Brandenburg University of Applied Sciences

An Introduction to Gretl and Hansl Scripting: A Comprehensive Course

This study presents a comprehensive course outline for introducing students to Gretl and its scripting language, Hansl. The proposed course covers fundamental topics in Hansl programming, including data import and manipulation, data types, and linear regression analysis. By providing a structured learning path, this course aims to equip students with the necessary skills to apply Hansl in statistical and econometric analysis. The course outline is based on a series of exercises that progressively introduce students to Hansl programming.

Participants

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