Adam Lee

adamjclee.github.io | adam.lee@bi.no | adamjclee@gmail.com

ACADEMIC EMPLOYMENT

2022 - **Assistant Professor**
Department of Data Science & Analytics, BI Norwegian Business School

EDUCATION

2018-22 **Ph.D. in Economics**
Universitat Pompeu Fabra

Essays on statistical inference in non-regular semiparametric models

Advisor: Geert Mesters
Committee: Juan Carlos Escanciano, Kirill Evdokimov & Majid Al-Sadoon

2016-17 **Master of Research in Economics, Finance and Management**
Universitat Pompeu Fabra

2015-16 **Master of Science in Economics and Finance**
Barcelona Graduate School of Economics

2009-13 **BSc in Economics**
University of Bath

FIELDS

Statistics, Data Science & Econometrics. I have a particular interest in statistical methodology, with a view to application in the social sciences.

PUBLICATIONS

[1] **Locally Robust Inference for Non-Gaussian Linear Simultaneous Equations Models**
with G. Mesters, Journal of Econometrics, *Volume 240, Issue 1, 105647, 2024*

All parameters in linear simultaneous equations models can be identified (up to permutation and sign) if the underlying structural shocks are independent and at most one of them is Gaussian. Unfortunately, existing inference methods that exploit such identifying assumptions suffer from size distortions when the true distributions of the shocks are close to Gaussian. To address this weak non-Gaussian problem we develop a locally robust semi-parametric inference method which is simple to implement, improves coverage and retains good power properties. The finite sample properties of the methodology are illustrated in a large simulation study and an empirical study for the returns to schooling.

[2] **Locally Robust Inference for Non-Gaussian SVAR models** *with L. Hoesch and G. Mesters,* Quantitative Economics, *15: 523 – 570, 2024*

All parameters in structural vector autoregressive (SVAR) models are locally identified when the structural shocks are independent and follow non-Gaussian distributions. Unfortunately, standard inference methods that exploit such features of the data for identification fail to yield correct coverage for structural functions of the model parameters when deviations from Gaussianity are small. To this extent, we propose a locally robust semiparametric approach to conduct hypothesis tests and construct confidence sets for structural functions in SVAR models. The methodology fully exploits non-Gaussianity when it is present, but yields correct size/coverage for local-to-Gaussian densities. Empirically, we revisit two macroeconomic SVAR studies where we document mixed results. For the oil price model of Kilian and Murphy (2012), we find that non-Gaussianity can robustly identify reasonable confidence sets, whereas for the labor supply–demand model of Baumeister and Hamilton (2015) this is not the case. Moreover, these exercises highlight the importance of using weak identification robust methods to assess estimation uncertainty when using non-Gaussianity for identification.

WORKING PAPERS

[3] **Locally Regular and Efficient Tests For Non-Regular Semiparametric Models**

Previously titled: "Robust and efficient inference for non-regular semiparametric models"

This paper considers hypothesis testing in semiparametric models which may be non-regular. I show that $C(\alpha)$ style tests are locally regular under mild conditions, including in cases where locally regular estimators do not exist, such as models which are weakly identified. I characterise the appropriate limit experiment in which to study local (asymptotic) optimality of tests in the non-regular case, permitting the generalisation of classical power bounds to this case. I give conditions under which these power bounds are attained by the proposed $C(\alpha)$ style tests. The application of the theory to a single index model and an instrumental variables model is worked out in detail.

[4] **Robust Estimation and Inference for Time-Varying Unconditional Volatility** *with G. Sucarrat and R. Sandberg, Submitted*

We derive a unified and general framework for estimation and inference in a large class of parametric models of time-varying unconditional volatility of financial return, both univariate and multivariate. A large number of well-known and widely used specifications, for many of which asymptotic results have not been specifically established, are contained in the class. Our framework is based on the multivariate equation-by-equation version of the Gaussian Quasi Maximum Likelihood Estimator (QMLE). An attractive property of the estimator is its ease of implementation, since the equation-by-equation nature reduces the curse of dimensionality associated with multivariate methods. Another attractive property is that the exact specification of the conditional volatility dynamics need not be known or estimated. Nevertheless, a model of conditional volatility can be estimated in a second step. In particular, we show that the (scaled) GARCH(1,1) specification is well-defined under both correct and incorrect specification within our framework. Due to the assumptions we rely upon, our results extend directly to the Multiplicative Error Model (MEM) interpretation of volatility models. So our results can also be applied to other non-negative processes like volume, duration, realised volatility, dividends, unemployment and so on. Finally, three numerical applications illustrate our results.

TEACHING EXPERIENCE

2022-   **BI Norwegian Business School**
- Advanced Statistics and Alternative Data Types (MSc)
- Excel Automation and Programming (BSc)

2016-22   **Barcelona School of Economics (TA)**
- Advanced Econometric Methods III (PhD)
- Econometric Methods III (MSc)
- Quantitative & Statistical Methods III (MSc)

2016-21   **Universitat Pompeu Fabra (TA)**
- Econometrics II (BSc)
- Econometrics (BSc)
- Introduction to Game Theory (BSc)
- Topics in Macroeconomics (BSc)

AWARDS & SCHOLARSHIPS

2022   Best paper award at the 2022 Spring Meeting of Young Economists for "Robust and efficient inference for non-regular semiparametric models"

2021   SNDE Young Scholars Award, for the best paper presented at the 2021 SNDE Workshop for Young Researchers for "Robust and efficient inference for non-regular semiparametric models"

2015   Full fee-waiver, Barcelona GSE.

2013   Neil Farmery Prize for "outstanding work in quantitative economics", University of Bath.

PROFESSIONAL ACTIVITIES

Presentations   2024: Microeconometrics Class of 2022 & 2023 Workshop (Duke University), European Association of Young Economists Annual Meeting (Paris School of Economics), University College London (Economics)[‡], IMS International Conference on Statistics and Data Science (Nice)[‡]

2023: IAAE Annual Conference (BI Norwegian Business School), Meeting of Young Economists (Collegio Carlo Alberto), University of Oslo (Statistics & Data Science), 16th CFE-CMStatistics (HTW Berlin)

2022: University of Surrey, BI Norwegian Business School (Department of Data Science and Analytics), Toulouse School of Economics, Duke University, Erasmus University Rotterdam (Econometric Institute), University of Liverpool, Western University, 12th Workshop in Time Series Econometrics (Zaragoza), Spring Meeting of Young Economists (Orléans), Data Analytics for Business Workshop (Verona), Advances in Econometrics (Barcelona School of Economics Summer Forum), EEA/ESEM (Bocconi), SAEe (València), 15th CFE-CMStatistics (King's College London)

2021: Barcelona GSE Jamboree (Online), SAEe (Barcelona), SNDE Workshop for Young Researchers (Online)

2020: Barcelona GSE Jamboree (Online)

Posters   2020: EC^2 (Online)

Refereeing   Journals: SERIEs, Annals of Applied Statistics

Conferences: Northern Lights Deep Learning Conference (2023), Annual Meeting of the European Association of Young Economists (2023, 2024)

Service   Program Committee: Annual Meeting of the European Association of Young Economists (2023, 2024[†])

Board Member: European Association of Young Economists (2023 –)

([‡] : upcoming, [†] : committee chair)

IT SKILLS

Languages	Julia, R, Python, C++, Javascript & Typescript
Miscellaneous	Linux, Bash, LaTeX, Git

OTHER EMPLOYMENT

2017-18	**Research Assistant**	**Princeton University**
2013-15	**Assistant Economist**	**HM Treasury, UK**
2011-12	**Economist (Intern)**	**UBS Global Asset Management, UK**