Ekaterina Ugulava

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Education

University of Amsterdam — Amsterdam, the Netherlands
PhD Candidate in Econometrics — *Sep 2021 – Sep 2025 (expected)*
Supervisors: Prof. Dr. H. Peter Boswijk, Dr. Sander Barendse and Dr. Paolo Gorgi

Tinbergen Institute — Amsterdam, the Netherlands
MPhil in Economics (Advanced Econometrics Track) — *Jan 2020 – Aug 2021*
Thesis: Long Memory Realised GAS Model

National Research University (NRU) – Higher School of Economics — Saint-Petersburg, Russia
BSc in Economics — *Sep 2015 – Jun 2019*

University of York — York, the United Kingdom
Academic mobility programme — *Jan 2018 – Jun 2018*

References

Prof. Dr. H. Peter Boswijk
Professor of Financial Econometrics
University of Amsterdam
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Dr. Sander Barendse
Assistant Professor of Econometrics
University of Amsterdam
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Dr. Paolo Gorgi
Associate Professor of Econometrics and Data Science
Vrije Universiteit Amsterdam
p.gorgi@vu.nl

Research

Primary Fields: Econometrics, Financial Econometrics.
Secondary Fields: Risk Management, Macroeconometrics.

Job Market Paper (Working Paper)

- *"Horizon-based Estimation of Volatility Models: Application to Specification Testing and Forecasting", 2023.*

Abstract: Multi-period volatility forecasting of cumulative returns is crucial for financial decision-making. However, misspecified models can lead to inaccurate forecasts, as standard parameter estimation methods, such as quasi-maximum likelihood, may not align with the forecasting objective. To reduce the impact of model misspecification, we propose estimating parameters of GARCH- and RV-type models using a QLIKE loss function tailored to multi-period volatility, ensuring that estimation and evaluation loss functions are aligned. Since both estimators are consistent for the true parameter vector when the model is correctly specified, we develop a misspecification test based on the Hausman principle, which compares two estimators—one of which is efficient but not robust to the forecasting objective. In a Monte Carlo study, we examine misspecification with respect to long memory dynamics. Our results show that the specification test is correctly sized and has power that increases with the degree of long memory misspecification. Additionally, we recover multi-period volatility forecasts and find that when the null hypothesis of correct specification is not

rejected, both estimators perform equivalently; however, when rejected, our estimator demonstrates improved forecast accuracy. In an out-of-sample analysis of ten return and realised measure series from 2001 to 2010, we demonstrate the empirical usefulness of our estimator particularly for less complex (more misspecified) models, which highlights that the performance of our estimator depends on the bias-variance trade-off.

Other Working Papers

- *"Long Memory Realised GAS Model", 2022.*

Summary: We introduce a univariate score-driven model that explicitly incorporates long-memory dynamics in the conditional variance of daily returns. We model the conditional variance both as a fractionally integrated process and as a heterogeneous autoregressive model. The new model accommodates heavy-tailed densities for both daily returns and realized measures. This choice of observational densities ensures automatic correction for influential observations through the score function. Our out-of-sample analysis identifies that accounting for long memory is particularly useful for volatility level evaluation and return risk assessment during non-crisis periods.

- "Simulation-based Method for Quantiles of Cumulative Variables", 2024.

Summary: We propose a simulation-based method for constructing conditional quantiles of cumulative variables of interest (e.g., returns, GDP) based on a finite set of one-step-ahead estimated conditional quantiles. We show that the cumulative quantile generated by our method minimises the expected value of the quantile tick-loss function specified with respect to the cumulative variable. Our approach has applications in constructing downside measures of risk, such as Value-at-Risk for cumulative returns and Growth-at-Risk for cumulative GDP growth.

Academic Experience

Vrije Universiteit Amsterdam (VU Foundation) — Amsterdam, the Netherlands
Research Assistant for Prof. dr. Siem Jan Koopman and Prof. dr. Francisco Blasques — *Feb 2021 – Jul 2021*
- *Score-Driven Models: Methodology and Theory, 2022.* Download
- *Score-Driven Models: Methodology and Applications, 2022.* Download

National Research University (NRU)– Higher School of Economics — Saint-Petersburg, Russia
Research Assistant for dr. Alexander Muravyev — *Nov 2018 – Dec 2018*

Teaching Experience

Teaching Assistant, University of Amsterdam
- Econometric Analysis (BSc): *Fall 2024*
- Advanced Risk Management (MSc): *Spring 2022, 2023, 2024*
- Econometrics (BSc): *Fall 2022, 2023*
- Thesis supervision (BSc): *Spring 2022*

Teaching Assistant, Tinbergen Institute
- Advanced Mathematics (MPhil): *Fall 2021, 2022, 2023*
- Advanced Econometrics III (Time Series Econometrics, MPhil): *Spring 2021*

Seminars and Conferences

2024: 12th SIdE Workshop for PhD students in Econometrics and Empirical Economics (discussant Massimiliano Caporin); International Association for Applied Econometrics (Xiamen, China; Thessaloniki, Greece).

2023: UvA Econometrics internal seminar (Amsterdam, the Netherlands); TopQuants: Autumn Event, poster (ING, the Netherlands); 3rd International Econometrics PhD Conference (Econometric Institute at Erasmus University Rotterdam, the Netherlands).

2022: Brown Bag Econometrics Lunch Seminar (University of Amsterdam, the Netherlands); International Association for Applied Econometrics (King's College London, the UK); 2nd International Conference on Econometrics and Business Analytics (Yerevan and Dilijan, Republic of Armenia); CEBA talk (online); 16th International Conference CFE (King's College London, the UK).

Additional Education

Scientific Programming in Python — University of Amsterdam
Lecturer: dr. Simon Pauw — *February – March 2024*

• Python data structures, Pandas, Seaborn, functional and object oriented programming.

Machine Learning in finance — Tinbergen Institute
Lecturer: Prof. dr. Yacine Aït-Sahalia — *November 2021*

• Methodologies employed in machine learning and applications in finance (credit scoring, factor models, sentiment analysis).

QFFE Spring School — Aix-Marseille School of Economics
Lecturers: Prof. dr. Jun Yu, Prof. dr. Kris Jacobs — *June 2023*

• Estimation, inference, prediction, identification of fractional time series. Specification and estimation of dynamic option valuation models.

Tutorials CFE — King's College London
Lecturers: Prof. dr. Armelle Guillou, dr. Michael Pitt — *December 2022*

• Extreme value analysis. Latent variable dynamic models.

QFFE Spring School — Aix-Marseille School of Economics
Lecturers: dr. Christian Brownlees, Prof. dr. Peter Reinhard Hansen — *June 2022*

• Large dimensional network models. Estimation of covariances and correlations in finance.

Econometrics Summer Workshop — Vrije Universiteit Amsterdam
Lecturers: Prof. Dr. Siem Jan Koopman and Prof. dr. Francisco Blasques — *August 2019*

• Estimation and inference of econometric models, and prediction.

Prizes and Awards

Tinbergen Institute Full Graduate Scholarship	*2020-2021*
Holland Scholarship Programme (contribution towards costs of living)	*2019*
VU Fellowship Programme (tuition fee waiver for MSc)	*2019*
Excellence Scholarship Erasmus+	*2018*
Scholarship from VTB Bank for outstanding results in studies and scientific work	*2018*
Finalist in the Econometrics projection competition: "The level of domestic corruption in Russia"	*2018*
Full State Scholarship for merits (tuition fee waiver for BSc)	*2015-2019*

Skills

Languages: Russian (native), English (fluent), Dutch (pre-intermediate, B1), Spanish (beginner, A2.1)

Programming languages: Matlab (advanced), Python (advanced) and R (advanced)

Statistical software: Stata (intermediate) and EViews (beginner)