



# Ekaterina Ugulava

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## EDUCATION

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### University of Amsterdam

*PhD Candidate in Econometrics*

*Supervisors: Prof. Dr. H. Peter Boswijk, Dr. Sander Barendse and Dr. Paolo Gorgi*

Amsterdam, the Netherlands

*Sep 2021 – summer 2025 (expected)*

### Tinbergen Institute

*MPhil in Economics (Advanced Econometrics Track)*

*Thesis: Long Memory Realised GAS Model*

Amsterdam, the Netherlands

*Jan 2020 – Aug 2021*

### National Research University – Higher School of Economics

*BSc in Economics*

Saint-Petersburg, Russia

*Sep 2015 – Jun 2019*

### University of York

*Academic mobility programme*

York, the United Kingdom

*Jan 2018 – Jun 2018*

## RESEARCH

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*Primary Fields:* Econometrics, Financial Econometrics.

*Secondary Fields:* Risk Management, Macroeconometrics.

### Job Market Paper (Working Paper)

- “*Horizon-Matched Estimation of Volatility Models: Application to a Misspecification Testing and Forecasting*”, 2024. [Download](#)

*Abstract:* Multi-period volatility forecasting is crucial for financial decision-making. We consider a scenario where the decision-maker specifies an ex-ante loss function, such as the QLIKE, to assess the accuracy of multi-period volatility forecasts from a candidate volatility model. To reduce the impact of model misspecification on forecast accuracy, we introduce an estimator that is ‘matched’ to the specification of the forecast evaluation loss function. We examine the estimator’s performance under a bias-variance trade-off, highlighting conditions where it is likely to offer improvements over standard estimation methods. We also propose a model misspecification test based on the Hausman principle, which exploits the fact that our estimator and the standard estimator are consistent for the true parameter under the null of correct specification but converge to different pseudo-true values under the alternative. In a Monte Carlo study, we examine the misspecification with respect to long-memory dynamics. Our results show that the misspecification test is reasonably sized and has power that increases with the degree of long-memory misspecification. Additionally, we recover multi-period volatility forecasts and find that under correct specification, both estimators perform equivalently; however, under misspecification, our estimator provides superior forecast accuracy. Finally, an out-of-sample analysis across ten return and realised measure series from 2001 to 2010 suggests three key findings: first, it is optimal for our estimator to match the estimation loss function to a shorter horizon than the forecasting horizon; second, our estimator provides greater accuracy gains for GARCH-type volatility models applied to realised measures of volatility compared to those applied to returns; and third, our estimator leads to greater accuracy gains for underparameterised models (which are more likely to be misspecified), highlighting the bias-variance trade-off.

### Other Working Papers

- “*Long Memory Realised GAS Model*”, 2022 (draft available soon).

*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 as a fractionally integrated process and as a heterogeneous autoregressive model. The new model accommodates heavy-tailed densities for both daily returns and realised 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.

### Work in Progress

- “*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 risk measures, such as Value-at-Risk for cumulative returns and Growth-at-Risk for cumulative GDP growth.

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## 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

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## 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*

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## SEMINARS AND CONFERENCES

**2024:** 12<sup>th</sup> 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); 2<sup>nd</sup> 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).

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## ADDITIONAL EDUCATION

### Scientific Programming in Python

University of Amsterdam

Lecturer: Dr. Simon Pauw

Feb – Mar 2024

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

### Machine Learning in finance

Tinbergen Institute

Lecturer: Prof. Dr. Yacine Aït-Sahalia

Nov 2021

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

## QFFE Spring School

Lecturers: Prof. Dr. Jun Yu, Prof. Dr. Kris Jacobs

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

Aix-Marseille University

Jun 2023

## Tutorials CFE

Lecturers: Prof. Dr. Armelle Guillou, Dr. Michael Pitt

- Extreme value analysis. Latent variable dynamic models.

King's College London

Dec 2022

## QFFE Spring School

Lecturers: Dr. Christian Brownlees, Prof. Dr. Peter Reinhard Hansen

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

Aix-Marseille University

Jun 2022

## Econometrics Summer Workshop

Lecturers: Prof. Dr. Siem Jan Koopman and Prof. Dr. Francisco Blasques

- Estimation and inference of econometric models, and prediction.

Vrije Universiteit Amsterdam

Aug 2019

## PRIZES AND AWARDS

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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

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

**Programming languages:** Matlab (expert), Python (proficient) and R (proficient)

**Statistical software:** Stata (experienced) and EViews (experienced)

## PLACEMENT

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**Prof. Dr. Eric Bartelsman**

Placement Director ([e.j.bartelsman@vu.nl](mailto:e.j.bartelsman@vu.nl))

**Christina Månsson**

Placement Assistant ([c.mansson@tinbergen.nl](mailto:c.mansson@tinbergen.nl))

## REFERENCES

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**Prof. Dr. H. Peter Boswijk**

Professor of Financial Econometrics

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**Dr. Sander Barendse**

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**Dr. Paolo Gorgi**

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**Dr. Anne Opschoor**

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