Lorenzo Giordani

MSc in Macroeconomics and Finance | Quantitative and Data Analysis

Rome, Italy | linkedin.com/in/lorenzo-giordani | github.com/Lgiordani22 | lorenzogiordani.pages.dev

PROFILE

MSc graduate in Macroeconomics and Finance (110/110 cum laude) with strong quantitative training in time-series econometrics, forecasting and statistical learning. Experienced in building complete analysis pipelines in Python and R: collecting and validating data, estimating models, evaluating forecasts and communicating results, with reproducible, version-controlled code.

EDUCATION

MSc in Macroeconomics and Finance

Sapienza University of Rome · Jan 2025 – Oct 2026 · Final grade: 110/110 cum laude

- Thesis: *Nowcasting U.S. GDP with a Mixed-Frequency Dynamic Factor Model with Student-t Errors*. Supervisor: Prof. Massimiliano Tancioni; co-supervisor: Prof. Milos Ciganovic.
- Developed a mixed-frequency Dynamic Factor Model (DFM) with Student-t errors to nowcast U.S. GDP growth from a panel of 37 macroeconomic series, estimated by Expectation–Maximisation (EM) with the Kalman filter and smoother, implemented from scratch in Python (NumPy, SciPy, pandas) as a reproducible, tested codebase.
- Evaluated weekly pseudo-real-time nowcasts over 2007–2025 against four Bayesian VARs, the New York Fed Staff Nowcast and univariate benchmarks with forecast-accuracy tests; the factor model achieved a lower average error than all four Bayesian VARs and the New York Fed.

BSc in Economics and Finance

Sapienza University of Rome · Oct 2021 – Dec 2024

- Thesis: *Energy and critical raw materials supply: the impact on European competitiveness*. Supervisor: Prof. Francesco Nucci.
- Analysed the drivers of the EU competitiveness gap identified in the Draghi Report (2024): gas-market marginal price setting, energy costs and the EU ETS for energy-intensive industries, the concentration of critical raw material supply chains, and the policy responses (CRMA, IRA).
- Reviewed a production model with foreign critical inputs (Panon et al., 2024) that estimates the impact of a supply disruption on value added in five European countries.

PROJECTS

Personal website with macro and market dashboards updated daily

Python, JavaScript, GitHub Actions

- Python pipelines download, validate and publish macroeconomic and market data from public sources (FRED, BIS, ECB, Eurostat, U.S. Treasury, EIA), scheduled with GitHub Actions, with automated checks.
- Dashboards: macro indicators, government yield curves since 2000 (U.S., euro area, U.K., Japan, China), a U.S. Treasury curve fitted from bond prices (Nelson–Siegel–Svensson), energy and metals.
- Developed with agentic AI coding tools (Claude Code), specifying, reviewing and testing the code.

EXPERIENCE

Location Manager

OneGroup Italy · 2026 · Piano City Roma, Palazzo delle Esposizioni, Rome

- Coordinated concerts and audience flows on site and handled on-the-day logistics.
- Acted as point of contact between artists, staff and the venue.

Private Tutor in Mathematics, Econometrics and Statistics

Self-employed · Ongoing · One-to-one lessons

- Several years of one-to-one tutoring in mathematics, econometrics and advanced statistics for finance, including university students preparing exams.

RELEVANT COURSEWORK

MSc in Macroeconomics and Finance · Sapienza University of Rome

Machine learning and quantitative methods

- **Artificial Intelligence in Banking and Finance:** machine learning pipelines and feature engineering in Python, decision trees, random forests and boosting (XGBoost), SVM and kNN, PCA and clustering, NLP (text preprocessing, TF-IDF, word embeddings (Word2Vec), transformers such as BERT), explainable AI (SHAP, LIME), prompt engineering, overview of neural networks and deep learning (TensorFlow, PyTorch)
- **Advanced Statistics for Finance:** bias–variance trade-off and overfitting, subset selection (AIC/BIC) and cross-validation, bootstrap, logistic regression, discriminant analysis (LDA, QDA) and kNN, Ridge, Lasso and Elastic Net, PCA, PCR and PLS regression, classification and regression trees, bagging and random forests, Monte Carlo methods (in R); course report on credit scoring with the Lasso
- **Computational Tools for Macroeconometrics:** pseudo-real-time ARX forecasting on FRED-MD with forecast-error evaluation, numerical optimisation (gradient descent, BFGS, numerical and automatic differentiation) and conditional vs exact maximum likelihood for AR models, Monte Carlo experiments and moving-block bootstrap, Ridge and Lasso (sparse-model recovery, cross-validation), regression and classification with scikit-learn (logistic regression, ROC/AUC, decision trees, random forests), introduction to neural networks, deep learning and overfitting; all in Python
- **Mathematics for Finance:** linear algebra (linear maps, change of basis, eigenvalues and diagonalisation, quadratic forms, orthogonal projections and least squares), multivariate optimisation with equality constraints (Lagrange multipliers, bordered Hessian), ordinary differential equations

Econometrics and forecasting

- **Intermediate Econometrics:** OLS, GLS and IV, maximum likelihood and GMM, LR/Wald/LM tests, ARMA models, unit-root tests, Kalman filter, term-structure models (Nelson–Siegel–Svensson, Vasicek)
- **Quantitative Macroeconomics and Policies:** unit-root tests (ADF, PP), trend–cycle decompositions (HP, Beveridge–Nelson, Hamilton filter), cointegration and error-correction models, VARs and SVAR identification (recursive, long-run and sign restrictions, proxy/IV-SVARs), IRFs, variance and historical decompositions, local projections, machine learning (Lasso-VARs, nowcasting, double/debiased ML); in Python, with group replications of Christiano–Eichenbaum–Evans (2005) and Bauer–Swanson (2023) and an individual replication of Adrian–Boyarchenko–Giannone (2019)
- **Advanced Econometrics:** linear panel data (fixed, random and first-difference estimators, Hausman test, FE-IV), dynamic panels (Arellano–Bond GMM), difference-in-differences, worker–firm fixed effects (AKM) with variance decompositions, Oaxaca–Blinder decomposition, Monte Carlo simulation; group presentation of Briskar et al. (2023) on industries and rising wage inequality

Economics, finance and banking

- **Financial Economics:** expected utility and risk aversion (Arrow–Pratt), Fisher separation, general-equilibrium asset pricing (Arrow–Debreu securities), martingale pricing (risk-neutral valuation), incomplete markets and spanning with options, informational efficiency (Hirshleifer effect), mean-variance portfolio theory and two-fund separation, CAPM and its empirical tests, Modigliani–Miller, APT
- **Banking and Financial Regulation:** EU and Italian financial law: Banking Union (SSM, SRM), ECB, EBA, ESMA, EIOPA, capital requirements (CRR/CRD IV, Basel III), MiFID II, hedge funds (AIFMD), Solvency II
- **Monetary Economics:** RBC, Blanchard–Kiyotaki and New Keynesian DSGE models, Taylor rules and determinacy, optimal policy (LQ and Ramsey, commitment vs discretion), Markov-switching regimes
- **Advanced Macroeconomics:** Solow and endogenous growth, growth accounting and convergence, permanent income and random-walk consumption, Tobin's q, Ricardian equivalence, Lucas model

SKILLS

Programming: Python (NumPy, pandas, SciPy, statsmodels, scikit-learn, Matplotlib, seaborn, Plotly), R, Stata, Git and GitHub, command line, LaTeX, Jupyter, Microsoft Office, agentic AI coding (Claude Code)

Econometrics: time series (ARMA, VAR and SVAR, local projections, Bayesian VARs, DFMs), state-space models and Kalman filter, maximum likelihood, GMM and EM, panel data, forecasting and nowcasting

Machine learning: Ridge, Lasso and Elastic Net, classification, trees and boosting, PCA, cross-validation

Languages: Italian (native), English (fluent)